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ILLUSTRATIONS.

Accepted Design for the New Admiralty and War Offices.—Messrs. Leeming & Leeming, Architects 322-323
Plans of the Accepted Design for the New Admiralty and War Offices 326-327
St. Paul's Cathedral: Design for Decoration of the Dome, by Hugh Stannus, A.R.I.B.A. 330-331
Proposed New Mission-hall, St. Augustine's, Haggerston.—Mr. R. A. Briggs, Architect 334
Proposed New Porch and Mission-room at St. Augustine's, Haggerston 335

CONTENTS.

The Two Designs for the Decoration of St. Paul's 313
Proposed Forth and Clyde Ship Canal 314
Notes 316
Archæological Progress in Cyprus 317
The British Archæological Association 318
Accepted Design for the New War Offices 320
The Decoration of St. Paul's Cathedral 320
Proposed Mission-house and Porch, St. Augustine's, Haggerston 337
The Private Bill Legislation of the Session, and Public Works 337
The Fifth International Congress on Hygiene 338
The Liverpool Autumn Exhibition 339
Ventilating Appliances at the Health Exhibition 340
A Periodical Question 340
Provincial News 340
School Building News 340
The Student's Column: Hints for the Study of the History of Architecture.—X.—Fifteenth-Century Gothic 341
Building Patent Record 342
A Memorial of the Landing of St. Augustine in England 342
Miscellanea 342

The Two Designs for the Decoration of St. Paul's.

ON the 5th of July last we published a coloured plate showing a reduction of the general design by Mr. Poynter for the decoration of the dome of St. Paul's, and two plates, giving on a larger scale the subjects painted by Sir F. Leighton and Mr Poynter respectively for the larger and smaller circular spaces between what may be called the ribs of the design. The design from which our coloured illustration was taken was then expected to be in a few days exposed to public view in its place in the dome; but unforeseen difficulties in the fixing of the immense cartoon appear to have led to repeated delays, and it was only about the commencement of this week that the scaffolding was so far removed as to render it possible to form an idea of the effect of the cartoon *in situ*. Since that design was published we learn that there has been "another Richmond in the field." Mr. Hugh Stannus has been for some time engaged in working out a design of his own, the cartoon for which is also now fixed in position on the opposite side of the dome. We publish in this number a fac-simile of a line drawing kindly furnished to us by Mr. Stannus, showing his design so far as it can be shown without the aid of colour; and in another column will be found his own statement, at some length, as to his views and intentions in the design. Mr. Poynter's description of the motive and working out of his design will be found in the *Builder* for July 5th, under the heading "Illustrations." Both designs are professedly based, in general scheme, on the grand sketch left by Stevens, of whom Mr. Stannus, we believe, was a pupil; and both may be said to have to some extent the same object,—that of reducing the lines of Stevens's design into more strictly architectural form, and rendering it more in accordance with architectural fitness and expression in regard to the arrangement of the substructure.

It is only fair to Mr. Stannus to say at once that the drawing he furnishes, and for which we are not responsible, does no justice to the effect of his design as seen in the coloured cartoon; and those who are interested in the experiment and are within reach should visit St. Paul's and make their estimate from the cartoons themselves. It is also as well to explain that the larger and smaller intermediate circles are purposely only roughly filled in with indications of pictorial subjects, because, as we understand him, Mr. Stannus regards those as out of his jurisdiction and to be filled up, as in the other scheme, by Sir F. Leighton and Mr. Poynter. He has designed certain accessory figures in the base of each compartment and in the lunettes in the drum, and of these it is not, perhaps, necessary to say much. They are not likely to be executed as designed; but that does not affect much the main *raison d'être* of Mr. Stannus's design, which, as he himself says in his description, is an architect's design rather than a painter's, and is intended really to suggest a different method of treating the architectural detail and arranging and dividing the space.

The other cartoon, of course, stands on different ground. Though grouped in accordance with what may be regarded as the architectural lines of the structure (concerning which a word anon), and though it was intended, as explained in the description given,—mostly in Mr. Poynter's own words,—(p. 11, *ante*), to reduce to more architectural congruity the rather ragged lines of Stevens's composition, it is essentially a painter's design, and as such is to be judged. Of the very fine character of some of the work there will be no question, we surmise, raised anywhere. We must humbly confess that the large circle, painted by the "P.R.A.," the picture of "the sea giving up her dead," does not strike us as happy, even with some alterations which appear to have been made in it since it was first painted. Its effect is, as we heard it put, somewhat "gruesome." There is no suggestion in it, to our thinking, of the rising of imprisoned souls to a vision of immortal life, which surely would have been the most suitable idea to have suggested in the centre and crowning portion of a great Christian church. It suggests rather the slow and painful ascent of corpses from the waves, as if dragged up perpendicularly by some unseen but relentless force. The idea is not an inspiring one, and we fear the design will not find many favourites. Of Mr. Poynter's figure subjects, two portions at least are equal to anything he has ever done, and may, in fact, rank among his very finest productions. The seated figure of the prophet, and that of the angel beside him, recall Michelangelo, certainly; but, they recall him in a way in which modern painting has not often succeeded in recalling the manner of the great Florentine. They are in his spirit, but are no plagiarisms. In this respect they carry on also the spirit of Stevens, whose powerful figures they supersede, and who may be said to have been Michelangelesque or nothing. The painting in the lunette above, of "Christ in Judgment," has less of the Michelangelesque and more of the modern artist. As we saw it in Mr. Poynter's studio, it appeared a grand design, and one which to a remarkable degree solved the difficult problem of combining decorative effect with life-like delineation of the figure. The aspect of the face of Christ, stern and passionless, the foreshortening of the outstretched right hand, the drawing and grouping of the other figures in the composition, the cherubim who fill up the space in subordination to the principal figure, go to make a very powerful work, impressive in feeling as well as in drawing and composition. But now comes the moral of the tale: how are all these qualities to be recognised by the spectator who, with aching muscles, throws his head back to gaze up at this apparently small lunette far up in the dome? The fine points of the work are quite lost; only the main disposition of the figures can be realised. The small scale to which the work is reduced is the more emphasised by the larger size of the circular subject underneath it and somewhat nearer the eye; and the proper relative importance of the two subjects thus seems reversed; the incident of the rising of the dead from the sea becomes the most important and strikes the eye most, while the figure of Christ in judgment, which certainly should be the predominant one, is placed in a smaller and less important section of the design, and thus becomes dwarfed into a secondary position. In regard to this, Mr. Stannus's arrangement of the spaces appears to afford better opportunities for the painter. The two sets of circles are more distinct in size, and thus the large lower circle could be employed for the principal subjects, and the small ones above merely for subsidiary related subjects or decorative figures. That is not the idea suggested by Mr. Stannus; but that is the use to which we should put his scheme when it came to filling in the framework with painted subjects. The main subjects would then have more space and be nearer the eye. Whether Mr. Poynter's lower figures of the prophet and the angel, at the base of the segment, tell any better from below, it is not easy to say, as on Tuesday, when we looked at them, the scaffold still partially hid the base of the cartoon. They will probably tell the best, however, from their vigorous action and their more favourable position in regard to the spectator on the floor.* But in regard to the upper lunette, the result appears to us to be, what we feared from the first, the consigning of very fine work to a position in which it is quite lost.

When we leave the consideration of the pictorial subjects, and come to regard the effect of each design as a whole and in relation to the architecture, we can then consider them on equal ground. The idea in both is

* Of course from the Whispering Gallery the subjects can be seen well enough; but then one can hardly regard them as painted to be seen from there.

that of dividing the dome into eight compartments by eight ribs or more solid and architecturalised portions of the design, and eight interspaces corresponding to the division which is in some sort suggested by the architecture. Considering them in this light, the contrast between the painter's and the architect's design comes out very characteristically. If it be regarded as an object to divide the dome up into ribs and spaces, Mr. Poynter's design fails in emphasis. The rib portions are not sufficiently homogeneous (though far more so than in Stevens's design), nor do they assert themselves with sufficient prominence to keep the spaces in subordination. There is a want of leading lines about the whole; or, rather, the leading lines are not sufficiently brought out. It may have been Mr. Poynter's object to avoid this,—to break up the whole so as to escape having too prominent a division between ribs and spaces. But half measures are not satisfactory in such a case. Either you wish the dome to be a "rib-and-space" design, or you do not. If you do intend that, do it thoroughly and with no shirking. If the ribs are to be architectural lines, supposed to have relation to the structure, let them be strong and clearly defined, as architectural lines should be. Now from this point of view Mr. Stannus's arrangement meets the case the better of the two. He has not only emphasised his rib-lines and kept them simpler and more homogeneous, but he has suggested further strengthening them by treatment in relief; and this is strictly logical if the rib-and-space treatment be accepted. Supposing that we wish this architectural division of the dome, Mr. Stannus's is a frank acceptation of it worked out in a frankly architectural manner. His lines are everywhere stronger and more decisive; and he has acted well in stopping the design somewhat below the opening of the lantern, and strongly emphasising the horizontal circle there (more so in the cartoon than this drawing shows). In the conventional scroll-work running round the drum of the dome, which both designs exhibit nearly in the same position, Mr. Poynter shows more elegant, graceful, and original detail, more distinctively painter's work; Mr. Stannus shows larger and broader and more strictly architectural detail, more in keeping with the building; but also, from its large scale, rather tending to dwarf the architecture. If the whole of the substructure were decorated in the same key and in the same style, Mr. Stannus's dome design would be a thoroughly architectural finish in the ordinary sense, locking the whole design of dome and substructure together with its firmly-knit lines. But,—and this is a very formidable "but,"—it would sensibly and materially lower the apparent height of the dome. It does so already, even in ordinary colouring; so much so that it is difficult to believe that it is not actually lower than Mr. Poynter's, though both of them, we presume, are fixed in the same manner against the internal surface of the dome; and how much more would it do so if executed with the harder surface and stronger colour of mosaic!

And this brings us to the very central question affecting the whole scheme. Is it, after all, the right thing to divide the dome up into compartments in this formal manner? We spoke advisedly of such an arrangement as having reference to the "substructure," but what about the dome itself? The reply of those who wish for this rib-and-space division, of course, will be that Wren has so divided the dome structurally by his interposition of solid piers between each set of three windows. In other words, Wren knew that the dome wanted both lighting and buttressing, and he arranged for both, and he showed the buttressing externally also. But because counterforts are thus provided for the dome without interfering with its light, is it, therefore, any less in itself a dome, viz., a homogeneous spherical roof? Certainly not, and there is not a hint of dividing it internally into gores or sections, architecturally speaking. Thornhill treated his paintings so, it is true, and we may observe in passing that it is a question, if this architectural division of the dome be adopted, whether Thornhill's design is not, saving its Brobdingnagian rococo ornaments, the most effective in its general idea of all the three schemes that are at present to be seen on the concave of the dome. But we assert, in the face of all three, that this is not the true way to decorate a dome internally. A dome is essentially an undivided concave vault. To divide it into so many ribs is not only to contradict its real construction (whatever may be the arrangement of its substructure), but to lose all its effect of grandeur and mystery by dividing it up into measurable slices. Mr. Poynter's design, irrespective of its pictorial value, reduces the height, and what may be called the special expression of the dome, less than Mr. Stannus's, *because* its rib-divisions are incompletely emphasised, and are, therefore, less forced upon the eye. Sweep them away altogether, then, and instead of pretending to divide up the dome into ribs and spaces, treat it as what it is, one great homogeneous concave: fill it with a host of angels, or some such suggestive treatment, which would give a grand total effect, and would suggest a grand idea, without making the hopeless attempt to place a number of isolated and differentiated individual figures in a position where it is impossible they can ever be really seen, or their special expression appreciated. Do not throw away fine painting by placing it where it can never be seen; and do not throw away the whole real grandeur and mystery of a dome by cutting it up into sections like an orange. That appears to us to be the summary of the moral to be derived from the study of the two cartoons now hung in St. Paul's Cathedral.

PROPOSED FORTH AND CLYDE SHIP CANAL.

A PROMINENT engineering tendency of the age is the construction of short-cuts for ocean navigation and traffic. The magnificent success of the great Suez project, persisted in through much evil report and infinite discouragement, has been the chief incentive, and now all over the globe schemes of a kindred description are found in various stages of inception and progress. The days of canal making for purposes of inland traffic intercommunication merely have long since gone by, this class of work having been rendered all but obsolete by the greatly superior contrivance of the steam-worked railway. The railway cannot do everything, however. It is confined somewhat strictly within its legitimate domain of dry land, and cannot in any appreciable degree invade that of ocean navigation, although in mere coasting traffic it stands a powerful rival. The sea-going steamer may, on the contrary, by means of the ship canal contrivance, be made to affect the railway supremacy to a serious extent, there being, it may be said, no physical limit to the piercing of dry land for these waterways, except that of expense alone. In this sense, the operation of canal building, once so active and of late so dead, promises a vigorous revival, with results of a thoroughly revolutionary character so far as the channels of ocean-borne traffic are concerned. The Manchester proposal, for the time in abeyance, is that which has elicited the most earnestness and vigour within our own borders. Its almost realised success, so far as the Parliamentary stage is concerned had previously revived discussion upon the subject of ship canals generally, including one to connect the Tyne and Solway, but more particularly an older and much more momentous project, that, viz., of cutting the strikingly narrow neck of land between the estuaries of the Forth and Clyde, and thereby transforming the one island of Great Britain into two. This is a scheme which even an uninformed glance at the map will show to be rather a fascinating one.

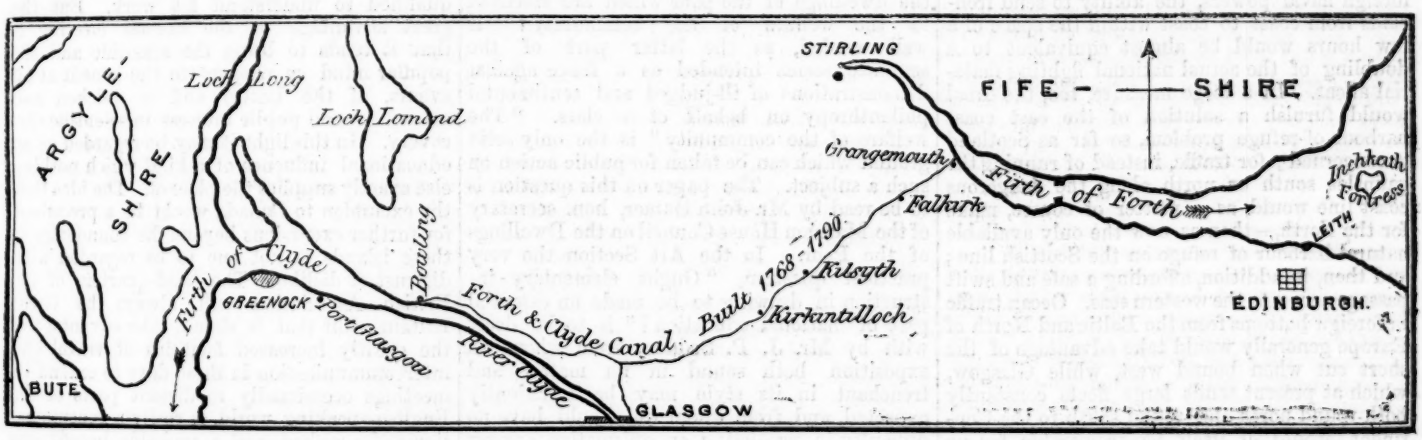
From Lizard Point in Cornwall, the most southerly stretch of England, to Dunnet Head in Caithness, the most northerly projection of the Scottish mainland, the distance, as the crow flies, is about 600 miles. The Orkney and Shetland groups of islands stretch in all about 150 miles still farther to the north, terminating in the Scaw of Unst, which is thus in a straight line distant about 750 miles from the most southerly point in England. With all vessels of any pretensions to size making from the North Sea into the Atlantic, it becomes a question whether passage is to be made southward through the English Channel, or northward *vid* the Pentland Firth. This alternative does not hold good, however, in certain exaggerations of unfavourable weather, and sometimes, especially in the case of sailing vessels, the longer though opener route, right round the north isles, is preferred before crowded Channel and dreaded Pentland alike. On the east coast, nearly 200 miles from the most northerly point of the mainland, the estuary of the Forth cuts about due west into the land, presenting on the map a wedge-like indentation, sixty miles long or thereabout. Almost directly opposite, on the west side, the Firth of Clyde breaks the coast-line with rather more of irregularity, projecting its inner waters in the direction, generally speaking, of the higher reaches of its eastern *vis-à-vis*, from which it is thus separated by a comparatively narrow isthmus. If this isthmus were adequately cut, as has been proposed, the east and west ocean and deep sea traffics would unquestionably be revolutionised, whatever might be the financial fortune or misfortune accruing to the promoters.

It is a neck of land of singularly low elevation, as compared with the ruling cross sections of Scotland, which elsewhere are all very hilly when not positively mountainous. The Romans marked it as a pass of great natural weakness, and drew across it seventeen centuries ago a defending earthwork, whose vestiges at numerous points and stretches from sea to sea are still plainly traceable. Generally speaking, it bears the appearance of a valley of trifling width, bounded on the north by hills of some elevation, and on the south by grounds of a very moderate rise. Except in the neighbourhood of Falkirk, the population is sparse, the small towns of Kilsyth and Kirkintilloch, with a few insignificant villages, comprising the whole, exclusive of the purely agricultural element. The River Kelvin, which falls into the Clyde at Glasgow, occupies the bottom of the depression over more than half its course; while the Carron in its lower reaches with its affluent the Bonny Water, whose united streams reach the Firth of Forth at Grangemouth, take up a similar position over the smaller eastern half. One of the Edinburgh and Glasgow turnpike routes accompanies the valley much of its way. The Kelvin Valley Railway, with extensions and connexions, scores it from end to end; and lastly, there is the Forth and Clyde Canal, which, in its small way, makes the most alike of narrowness of isthmus and moderation of summit level. This canal is quite complete of its kind, and was really at one time a ship canal of the period, accommodating the craft which then carried on the trade between the North of Europe and the West Coast, and for a while, indeed, existing in the highest reputation. The "Great Canal," as it was then termed, has outlived its greatness owing to the enormous strides in navigation of all kinds during the past half-century; but as this concern would have to be "reckoned with" (bought up most likely) in the event of a new enterprise, its record may here be briefly summarised.

In the year 1767 Parliament was applied to uninfluentially for permission to construct from firth to firth a ditch canal, 4 ft. deep, but general attention being thereupon aroused and becoming intensely interested, the scheme at once developed to the scope of a ship canal of 7 ft. depth, under the auspices of a powerful company. Operations commenced in 1768, and in the year 1773 the canal was navigable from Grangemouth to Kirkintilloch. Three years subsequently the neighbourhood of Glasgow was reached, but it was not until 1790 that finished junction was made with the Clyde at Bowling. The Clyde at Glasgow, and for many miles below, was a trifling stream

in those days, capable of accommodating nothing larger than the smallest of sailing craft, and then only at high water. But for this radical defect the canal might have terminated in the river immediately below the city, to the saving of at least ten miles of additional excavation in carrying the work down to Bowling Bay. At various epochs the depth of the canal was increased slightly, but this being a movement necessarily limited in a finished lockage work of the kind, it has long since ceased. Rising from the tidal water at Grangemouth, the work mounts in the course of ten miles and a half, by means of twenty locks in all, to its summit level of 156 ft. This level is maintained unbroken for sixteen miles, descent to the Clyde being effected over the remainder of the course by means of nineteen locks. The length of the work from sea to sea is thirty-five miles. The locks measure 74 ft. by 20 ft., and the waterway when full affords a draft of rather over 9 ft. The original capital involved stood at 150,000*l.*, but 70,000*l.* had afterwards to be borrowed privately, in addition to 50,000*l.* lent by the Government, sums, however, which were fully redeemed subsequently. As testifying to the amount of general, or rather national, interest surrounding the inception of the undertaking, it is worth noting that at the first general meeting of proprietors, held at the St. Alban's Tavern, St. Alban's-street, London, on the 14th of March, 1768, the Duke of Queensberry and Dover presiding, there were present four dukes, one marquis, four earls, and three baronets, besides a powerful residuum of untitled shareholders. At that time there were only two canals in operation within the British islands, though many schemes were in projection; but this of the Forth and Clyde stood alone in its quality as a navigable arm of the sea, through which, when the wind proved favourable, masted craft might freely pass by the impulse of their own canvas alone. And the idea was in some limited sense realised too, before steam stepped in and revolutionised the conditions of navigation generally. During the long war, traffic from the west of Scotland round the north and south points of Britain became all but extinguished, the canal securing nearly the whole of that portion of it still braving the risks of capture; but when peace was restored, the inevitable restrictions imposed by draught of water and dimensions of canal locks gradually told, and accordingly in the year 1816 we find many ships, slightly larger than the canal capacity, making the round passage to the Continent, and the governor and council of the company stretching every nerve in the way of possible enlargement of works and easement of traffic, in order to arrest, or at least impede, so threatening a tendency. The battle was a losing one for the latter from the first, though this was not generally apparent till the advent of steam navigation and the gradual introduction of those giant changes which have been effected through its agency. The canal has for many years been in the possession, and under the management, of the Caledonian Railway Company. Small coasting sloops and schooners occasionally use it on an emergency, and fishing-boats, from as far away sometimes as St. Ives in Cornwall, employ it as a short cut from eastern to western herring-grounds and *vice versa*. Middlesbrough pig-iron for the Glasgow market follows this route chiefly; but is invariably trans-shipped at Grangemouth into steam barges or horse-tracked craft, by means of which, also, a rather languid traffic in general merchandise is carried on.

When the Forth and Clyde Canal was projected the City of Glasgow was a place of barely 30,000 inhabitants. The Clyde was a paltry stream so far as navigation was concerned, though of some consequence in connexion with the salmon fishing industry. Smeaton, the engineer, had some years previously surveyed and reported upon it to the Navigation Trustees, with the result that an engagement with a Chester contractor was entered into for the deepening of the below-bridge channel. Under these operations the river became so scoured that by the year 1775 vessels drawing almost, but not quite, 6 ft. of water could come up from the sea,—a result which was at that time regarded as partaking of the nature of an achievement. Glasgow in our day, with the suburbs which its mushroom-like growth has gradually absorbed, possesses a population of, in round numbers, 700,000. The Clyde, from Greenock upwards, has since that time undergone so stupendous an excavation, carried on from year to year unceasingly, that the largest ironclad of the navy may now be piloted right up into the harbour itself, in all ease and security. The Clyde below Glasgow and until deep-sea water is reached is, in point of fact, only nominally a river, being in reality an inland ship canal of nearly twenty miles in length,—and a ship canal, too, of the very foremost grade; measured, that is, by depth of water and width of channel. This magnificent artificial waterway cuts into the land in an easterly direction with an inclination southwards, and in any scheme for piercing the Isthmus between the two Firths with a view to large-ship unimpeded navigation, these great Clyde works must be held as presenting, already in an entirely completed state, about one-third of the ambitious channel aimed at. Taking the Ordnance Survey sheets, it is seen that under the vastly improved conditions noted, a straight line drawn between the two points of deep-sea navigation which most closely approach each other, namely from the mouth of the Carron at Grangemouth to the Clyde about two miles and a half below Glasgow, stretches a distance of about twenty-five miles only. It is not necessary to go down now to Bowling or elsewhere for deep-water, deep-water having already been carried artificially up, even much higher than necessary for the particular purpose under review. The straight line thus hypothetically drawn, pursues throughout, with a fidelity which is rather striking at first glance, the base level of the crossing valley or depression already described. A short distance from the Clyde, whose margin at the point struck presents an exceedingly moderate rise, the Bowling arm of the old canal is crossed, and immediately after the river Kelvin is caught up at a great elbow of its course, round which it turns to the south-east in seeking a rather tortuous outlet higher up the Clyde at Glasgow. The Kelvin, which is not in any sense at all a navigable stream, is, generally speaking, straight in its course above this elbow. The valley through which it flows, and which bears its name, is at least practically straight stretching at a very gentle rise east-north-east past Kirkintilloch and Kilsyth, and pointing throughout right across the isthmus on the line of its narrowest section. Our supposititious map line keeps about the centre of this valley all the way, joining, about four miles distant from the Kelvin elbow mentioned, the course of the Forth and Clyde Canal, which at construction was made to hold rather more to the south than the levels demanded, and that for the purpose of passing Glasgow at a moderate distance only, a navigable cut to the northern suburbs of that city being also part of the scheme. The existing canal, once thus caught up, is not left again to any appreciable extent, as, after passing the head-springs of the Kelvin, it traverses the east-going and now descending valley of the Bonny Water, and soon thereafter enters upon the flat low-lying carse land through which the Carron tediously seeks its way for some distance above its entrance into the sea at the port of Grangemouth, the point at which also the present artificial navigation ceases. On the line thus rapidly overrun in description there are no hilly ranges to be cut; hardly anything even of the nature of a difficult ridge to be pierced, if difficulty be here measured by the best resources of modern engineering. But unquestionably the cutting of the isthmus for a tidal deep-water lockless canal, even under natural and artificial conditions of so singularly favourable a kind, must prove a work of extraordinary labour and outlay. The existing canal reaches its summit level at 156 ft., and remains at that for sixteen miles. There is here provided a kind of basis for calculating the amount of excavation which the cutting of a tidal waterway would necessitate. Yet is there room for a very liberal discount in the calculation; for it is found that over these sixteen miles the old canal, to preserve its level unbroken, has often to pass incidental depressions either by a deviation of track at the expense of increased length, or by embankment at the cost of massive works. Indeed, the old waterway, in its summit level section, is so far from taking advantage of the lowest levels procurable, that it is very frequently carried over, rather than under, roadways, railways, and watercourses. In the case of a tidal canal starting, as such a work must inevitably do, with a wholesale and uncompromising scheme of excavation throughout, a straighter, and therefore shorter, route might be embraced, and the benefit could be freely taken of whatever incidental depressions of surface the surveyors might encounter. The value of the land along the central valley is not very great. Much of the area was of old time mere morass, and part of it is still comparatively worthless moss. The arable portions take generally a very moderate standing as to market value, and the principal wealth consists in the minerals, which are worked almost unbroken from sea to sea. The mineral interest especially, and probably all the others except railways alone, would hail the prospect of a ship canal with the greatest ardour, and be prepared severally to concede the requisite facilities on terms most equitable, not to say most favourable. The roads and railways intersecting the route, for which swing or other opening bridges would have to be provided, are not numerous. The intersecting traffic is already partly inured



to the drawback, the Scottish Central Railway and the Great North Turnpike having been all along served in this way, though the Caledonian Railway and many minor roads are made to pass underneath.

It has been proposed,—perhaps hardly in serious mood, however,—to carry the canal by a wide half-circle round into Loch Lomond and thence through the Endrick and Forth valleys to the deep water of the eastern Firth. Over and above the almost fatal necessity of lockage impediments militating against a proposal of the kind, there are other disabilities, such as tedious length of route, barrenness of borders, &c., to which it would be difficult to reconcile likely promoters; and the idea has, therefore, been generally dismissed as beyond the pale of serious discussion. The central valley is the only likely route for a ship canal connecting the two estuaries, and if not made there it may safely be asserted that it will be made at no other crossing. The existing canal would be of immense assistance in aiding the progress of the new works, and even although it had to be bought and paid for bodily, as a preliminary to the starting of operations, the works services afterwards rendered might more than square the outlay. The advantages to be gained in a national point of view by the cutting of this isthmus for a ship canal of really first-class proportions are so prominent as to forcibly indicate the realisation as a suitable and proper undertaking for Government itself, rather than any mere syndicate of private investors. It has been pointed out, and not without justice perhaps, that were this country at war with any coalition of foreign naval powers, the ability to send ironclads from coast to coast within the space of a few hours would be almost equivalent to a doubling of the actual national fighting material afloat. In a large measure, too, the canal would furnish a solution of the east coast harbour-of-refuge problem, so far as Scotland is concerned; for traffic, instead of running the gauntlet south or north along the dangerous coast line would, as a matter of course, make for the Forth,—then as now the only available natural harbour of refuge on the Scottish line; and then, in addition, affording a safe and swift passage across to the western seas. Ocean traffic in foreign bottoms from the Baltic and North of Europe generally would take advantage of the short cut when bound west, while Glasgow, which at present sends large fleets constantly both round north and round south to the Continent, would of itself be answerable for no small part of the revenue necessary to make ends meet. The British Government is not entirely new to the canal business. The Suez investment has turned out successful beyond the dreams of the most sanguine at the time the purchase was made. The Caledonian Canal, finished on a national basis in the year 1822, and connecting West Highland waters with the Moray Firth, is not susceptible of so complacent a review, however. It was meant really to be a ship canal, serving all the uses of commerce and for all time to come. Its locks were constructed 170 ft. long, 40 ft. wide, and offering quite a generous draught of water, but it can hardly be said ever to have been accepted as other than a wondrous effort of civil engineering, and a noble monument to the genius of Telford. Tourist steamers have it now almost entirely to themselves, and they are abundantly patronised for the scenery is of the grandest; but as a through traffic route it has never taken any place, and it is chiefly useful to the Government and the nation as a standing warning against the repetition of costly, yet still but half-hearted, schemes of the kind. The existence of locks seems to be fatal to the permanent cultivation of a sea-to-sea navigation on any scale, and the histories of the Forth and Clyde and Caledonian canals are in this respect one and the same. The latter, constructed at a later date, resolved to avoid the mistakes of the former, and in size of locks and draught of water it really made a formidable step in the desired direction; but the Caledonian now is where the Forth and Clyde was so long as three-quarters a century ago, and that is practically and hopelessly out of the competition in the matter of through sea-going traffic. The lesson of the Suez Canal is to be taken to heart in all future projects of the kind. Finished as it is, and rejoicing in an enormous revenue, it is still essentially elastic in its conditions of construction, and may from time to time be deepened or widened to suit the exigencies of traffic, and that without suspending navigation for an hour. If the Scotch project is conceived on similar principles it will most likely prove a great engineering success, and remain so permanently.

NOTES.

THE subjects of the principal papers in the Health and Art Sections of the forthcoming Social Science Congress seem likely to be very well taken up this year, and in a manner worthy of the importance of some of them. In the Health Section the question "What is the best method of dealing with (*a*) town sewage, (*b*) the products of house and street scavenging, and (*c*) the products of combustion" is to be treated of by Mr. E. Pritchard, C.E., Mr. Lawson Tait, and Captain Douglas Galton. The only fault to be found with the "question" is that it perhaps attempts to deal with too many and too complicated subjects at once. Any one of the sub-divisions would be enough for a good day's work; but it is, perhaps, thought that some new light may be thrown on some practical relation between them. The second question in the same section, "What are the best means, legislative or other, of securing those improvements in the dwellings of the poor which are essential to the welfare of the community?" is well worded, as the latter part of the sentence seems intended as a fence against demonstrations of ill-judged and sentimental philanthropy on behalf of a class. "The welfare of the community" is the only solid ground which can be taken for public action on such a subject. The paper on this question is to be read by Mr. John Hamer, hon. secretary of the Mansion House Council on the Dwellings of the Poor. In the Art Section the very practical question, "Ought elementary instruction in drawing to be made an essential part of national education?" is to be dealt with by Mr. J. P. Seddon, from whom an exposition both sound in its matter and trenchant in its style may be confidently expected, and from whom we should have no difficulty in predicting an affirmative answer to the question, on which Mr. C. G. Leland and Mr. Rowland Hamilton will also contribute papers. "What is the value to the ear, the mind, the health, and the disposition of the young produced by class instruction in music?" is the second question in the Art Section, on which a paper will be read by Lady Macfarren, from whom we shall expect to hear a decisive attack on the false so-called teaching "by ear" or by a music-made-easy method which has been far too much countenanced by our educational legislators. Mr. Manby Sargison follows on the same subject. Concerning the third question:—"How can a love and appreciation of art be best developed among the masses of the people?" we have already expressed an opinion that such vague and large questions are of little practical value; but Mr. Walter Besant is to take it up, and we have no doubt the author of "All Sorts and Conditions of Men" will, at any rate, have something that is interesting to say, and give much pleasure to his listeners, even if no further result is attained.

WE gave, on August 23rd, in a "Note," the names of nine of the architects who had been selected from among those who had sent in sketches in competition for admission among the number who were to be asked to furnish designs for the Liverpool Cathedral. It was understood that twelve were to be selected for special consideration, and we now learn that among those thus selected were Messrs. Carpenter & Ingelow, whose name was omitted from no fault of ours. There is still no official statement published, and there are conflicting rumours on the one hand that twelve, on the other hand that only ten, were selected. If the latter is the case, we have now given all the names. From these, according to a statement in a Liverpool paper, which we have not yet seen contradicted, four architects have been finally invited to submit designs,—Messrs. Pearson, Bodley, Brooks, and Emerson. These are a very good four, no doubt, but this is a very limited competition for so important a thing as a new cathedral, and a larger number might very wisely have been invited. We cannot help adding that it would have been more fair to the competitors if a correct official statement of the result had been communicated to them and to the architectural press, instead of leaving the truth to be discovered by a system of cross questions and crooked answers. There can surely be no mystery about it, and those who have been selected had a right to expect that their names should be made known.

THE sceptics who doubted the wisdom of the Transatlantic trip of the British Association must surely be sufficiently answered by the accounts which have come across of the entire success of the meeting, both in a scientific and a social sense. It may be true that the practical importance of the work of the Association in advancing science is relatively less than it formerly was. There are so many more channels now for the communication of new ideas and new discoveries in science, that any one who has made a real step in any branch of scientific research may be sure of finding a hearing among the minority at least who are qualified to understand his work. But the great advantage of the annual meeting is that it tends to bring the scientific and the popular mind *en rapport* (to the benefit at all events, of the latter) and to quicken and extend general public interest in scientific discovery. In this light it may be regarded as an educational influence of a kind which nothing else exactly supplies the place of. The idea that the excursion to Canada would be a precedent for further excursions beyond the boundaries of these islands is not one to be regarded with distrust or dislike. The head-quarters of the British Association will always be Great Britain; but that it should take advantage of the greatly increased facilities of travel and intercommunication in these days to extend its meetings occasionally to distant parts of the English-speaking world, is really a consummation to be wished, and a probable benefit, one way or another, to all concerned.

MR. H. J. LANCHESTER, A.R.I.B.A., has suggested the construction of a new low-level bridge across the Thames between London Bridge and the Cannon-street Railway Bridge. This, he claims, would materially relieve London Bridge, for Southwark Bridge is, as he points out, too far west to be of any service in relieving congested traffic near London Bridge. He might have added that the gradients of Southwark Bridge are too severe for any but the lightest traffic. But the construction of the bridge now suggested by Mr. Lanchester involves the question of approaches. On the south side he suggests that a new street should be made, commencing in the High-street, Borough, crossing Southwark-street nearly at right angles, and passing through the Borough Market (which would have to be re-arranged) right up to the south end of the proposed new bridge, "which is to be carried over the Thames at a low level into Upper Thames-street, at a point 100 yards east of the Cannon-street Railway Station. At the junction with that street a square is to be formed of sufficient size to allow this traffic to pass readily east and west into Thames-street." The proposed bridge would no doubt in some degree facilitate traffic between Thames-street and Billingsgate and the southern suburbs. It is not suggested as in any way providing for traffic across the river at any appreciable distance eastward of London Bridge, for the accommodation of which Mr. Lanchester favours our view, that well-designed steam-ferries should be fairly tried before deciding upon bridge-building below London Bridge.

IN the South Annexe of the Health Exhibition is a model illustrating a design for the Utilisation of Tidal Power, a problem the solution of which has long exercised many ingenious minds, but which has not, we believe, been ever turned to useful account. In the tide, however, there exists an enormous reservoir of power capable, without question, of being profitably employed. That Mr. Maynard Walker's patent is an ingenious application of it is very apparent, but that it is an economical adaptation to the disposal of sewage from cities and large towns is not so clear; for though its action may be automatic, and the working expenses in consequence practically nothing, yet the works necessary to render it available cannot be erected except at so large a capital outlay as to make the interest amount to a very heavy item in comparison with that chargeable on the first cost of steam-pumping machinery, the working expenses of which would probably fall short of that interest. The economical application of Mr. Maynard Walker's system to some of the other purposes enumerated in the exhibitor's prospectus is quite possible, and especially in the accumulation or storage of power for the generation of the electric light, where a comparatively small storage area is required. The economical limit of its application, however, is a matter of very simple calculation. One indicated horse power being represented by 33,000 foot pounds, or, in round numbers, by 530 cubic feet of water raised through 1 ft., the same power would be obtained by 26·5 cubic feet raised through 20 ft., a volume requiring a cistern of 5¼ square feet, with a depth of 5 ft. The comparative economy with that of a steam-engine to do the same work would depend on the number and cost of cisterns to be erected in order to furnish the amount of power required, a calculation which any engineer could make in a few minutes.

FROM Dr. Airey's report to the Local Government Board, dated August 6th, on the sanitary state of the Borough of Burnley, we learn that the main drainage scheme has been completed, and the work of connecting the houses with the sewers, and cutting off the old drains that discharged into the rivers and canal, has been generally accomplished. The cleansing of the rivers has been greatly aided by the paving of their channels. The following particulars in regard to the treatment of the sewage, extracted from the report, will be of interest at the present moment:—

"The sewerage outfall is by the side of the River Calder, about two miles below Burnley. Here the sewage is treated by General Scott's process for the manufacture of cement. Lime is added, and lime-sludge precipitated in a series of settling tanks, from the last of which the effluent water escapes to the river. After heavy rain the volume of the sewage is greater than can be dealt with at the tanks, and the surplus goes into the river unaltered. On the day of my visit everything at the tanks was in very proper order, but I was led to suspect that this was not always the case, and that it often happened that the main object of dealing with the sewage so as to prevent its polluting the river was not attained. The lime-sludge is recovered from the settling-tanks and dried by heat previous to being burned to a slag in a lofty furnace. The slag is crushed to powder in a powerful mill, and the powder makes a good commercial cement. The process is by no means a remunerative one. It is worked by a company to whom the Burnley Corporation pay 1,400*l.* or 1,500*l.* a year. Complaint of nuisance from the fumes of the furnace is made by some residents in the neighbourhood.

Should the question ever arise of disposing of the sewage in some other way, it would be well to consider whether it might not be dealt with by irrigation. The position of Burnley in relation to the lower valley seems favourable for it, and the experience of the neighbouring town of Blackburn is encouraging."

VISITORS to the Health Exhibition, who really go there to study sanitary matters (if any do), will find some useful hints in regard to the portions representing the "Sanitary Arrangements of Dwelling-houses," in a pamphlet by Mr. Mark H. Judge, published by the Sanitary Assurance Association. It suggests what should be the desideratum in regard to various sections of house arrangement, and gives some information as to the objects to be found in the Exhibition in connexion with each subject mentioned. The pamphlet arose out of a Report to the Council of the Association.

IN Mr. Lovegrove's annual report of the Surveyor's Department for the Hackney District we note the mention of an experiment in rendering a roadway more durable under special conditions. On the western side of Stamford Hill it had been observed that, what with waterwash and the action of skidded wheels, this part of the road was difficult to keep in repair. Hot tar was, therefore, mixed with the granite at the wharf and carted to be laid on the road and rolled in. The success was only partial, but the surveyor thinks it would be more successful in future if the granite was first heated to thorough dryness before mixing. In the same report are some statistics as to the wear of asphalte under traffic. A sample laid down an inch thick in Broad-street in 1877 is now ⅝in. thick. The surface generally is in good condition, but in some of the narrower parts it is worn through to the concrete. The degradation from 1 in. to ⅝ in. is noted in several places where the asphalte was laid two years later, in 1879. Material laid down seven months since, at the same thickness, is not degraded at all. The asphalte in all these cases was the Limmer Company's Compressed. In regard to concrete paving, a sample of the Eureka Concrete, laid near the Stoke Newington Station, shows both longitudinal and lateral cracks. Mr. Lovegrove believes, however, that this defect will be avoided by the improved method of laying in alternate panels, which has been tried in the Kenton and Oakfield roads with success, no cracks having developed in these cases.

THE state of the Lower Thames has found a defender in Mr. Chas. A. Cameron, Vice-President of the Royal College of Surgeons, Ireland, who, according to a letter in the *Times* of Thursday, has, like some other people, gone down in a steamboat "to see and smell the Thames in a leisurely manner." Mr. Cameron smelt smells, but to him they all seemed to come from the banks of the river, and not from the water. He enjoyed his run through Barking Creek, and perceived not the slightest smell of sewage. Mr. Cameron's experience is certainly at variance with that of which many other observers have given evidence, but perhaps this may be accounted for by the fact that he went in a steamer "kindly placed at his disposal" by a member of the Metropolitan Board of Works, who is specially concerned with the sewage. No doubt the sewage is better behaved than to make itself disagreeable under those circumstances.

THE Vicar of Combe, Woodstock, communicates the following experience on "restoration" to the *Times*:—

"A few years ago a clergyman, who was also an archæologist, visited an ancient village church. On entering, he saw in the midst of it a man, who was on his knees, bowing low and facing the altar. The clergyman, of course, thought he had lighted on an instance of religious fervour, and that, moreover, expressed in an unexceptionable manner,—an instance which was highly exemplary, especially in these degenerate days. But, on getting a close view of the being in the reverential attitude and in the eastward position, the clergyman, also an archæologist, found, to his horror, that the supposed devotee was earnestly and vigorously wrenching out of the stone floor a fine old brass, and in doing so knocking it to pieces. The surprised and grieved beholder exclaimed, with some excitement, 'What are you about?' Without looking up, and without desisting one moment, the rustic,—a workman employed there,—quietly answered, 'We be a-restorin'.'"

This is an unquestionably good restoration anecdote,—too good to be true, some people may think; but we must protest against this sort of lively anecdote being put forward as an indication of the evil deeds of restoring architects. Granting the correctness of the facts, did the "clergyman, also an archæologist," ascertain whether the man was acting under orders, or whether he was not a stupid fellow exceeding his instructions?

MR. WHEATLEY brings to a conclusion, in the September number of that admirable periodical the *Antiquary*, a short series of interesting papers on "The Adelphi and its Site," which are well worth the attention of those who are interested in London records. The article for this month contains an illustration of the old deserted tavern "The Fox under the Hill," once much frequented, and which still stands on the land under the terrace. Mr. Wheatley concludes with a remark which should be taken to heart by architects and those who are concerned in promoting building in London. It is to the genius, he observes, of the Adams that we owe it that a site little different in regard to distinguishing character from the sites around, should have become a recognised district with a distinct name. The genius of the Adams, and the artistic value of their style, have been of late somewhat exaggerated; but still it was genius, and by the impress of it the brothers redeemed an ordinary city building locality from commonplace, and gave it a name and a permanent interest. The moral is, Go thou and do likewise.

ARCHÆOLOGICAL PROGRESS IN CYPRUS.

THE excavations of General Cesnola have not exhausted the possibilities of Cyprus, and surely if Englishmen are to excavate anywhere this island is the natural field for their labours. A committee, consisting of Englishmen and Cypriotes, was formed in 1882, by Sir Robert Biddulph with the object of establishing a local museum at Leukosia. Under the auspices of the committee, excavations on a small scale and supported by private subscriptions have been carried on in the years 1883-1884. It is a little surprising that these excavations have had to be conducted by a German, Herr Max Ohnefalsch-Richter, and that the report appears this month in a German periodical, the *Mittheilungen*, of the German archæological institute at Athens.

The site chosen was the village of Voni, the ancient Chytrai, and the find has been a large one. It speedily became evident from a multitude of inscriptions that the excavators had lighted on a sanctuary of Apollo. The architectural remains are insignificant, but there is evidence that on the remains of the old Pagan shrine a Christian church had been raised, into the walls of which a mass of fragments of ancient sculpture was built. The sculptural find was a very rich one, as many as 133 statues are already catalogued. They were found, for the most part, near the east front of the building scattered among a *débris* of ashes, bones, inscribed stones, fragments of terra-cotta, glass lamps, &c. As is usually the case in Cyprian remains, considerable monotony prevails,—a few types appear in endless replicas. The statues cover a wide area as to date: within a few square yards we have representatives of Egyptian, of Oriental, of Greek, and of Roman styles. The majority of the statues have been intended to stand against a wall; the back parts are unfinished; the front frequently picked out with colour. Three types, which all occur in several replicas, are of special interest. First, a statuette of Herakles, with lion-skin over his shoulders, and a horn in the left hand. Herakles, it will be remembered, is a hero always at home in Cyprus, and indeed in every Phœnician settlement. He frequently appears on Cyprian coins. Second, a male standing figure draped, holding in his left hand lustration twigs; in his right a figure of Nike. This little figure of Nike is interesting because its pose is like that of the famous Nike of Pæonios. The statue may possibly represent Apollo in his aspect of the Victory-bringer (Nikephoros). Third, the statuette of a boy seated with one leg tucked under him, and holding a dove. Probably this type represents Adonis, who is frequently connected with the worship of Apollo as with that of Aphrodite.

Together with the statues were found a large number of dedicatory inscriptions, with the names of worshippers and a record of their offerings to Apollo. In one instance, on the statuette of a female figure, a quadrangular tablet is engraved, bearing a well-preserved inscription in Cypriote characters.

While so much new work is going forward, it is satisfactory to learn that steps are being taken to render the Cyprian material already amassed by the Cesnola excavations permanently accessible to archæologists. If anything could console us as a nation for the loss of the Cesnola collection, which in a moment of national niggardliness we allowed to slip through our fingers, it is the proposed publication of a pictorial atlas illustrating the collection. The publication of such an atlas has been undertaken by the firm of Osgood & Co., Boston, under the auspices of the trustees of the Metropolitan Museum of Art, in which the collection now lies. It will be complete in three volumes, one of which is to appear this autumn: each volume is to contain 150 plates, some in colour by the chromolithographic process; some in heliotype from photographs. Only 200 copies will be printed, after which the plates are to be broken up. The total cost is to be 150 dols. The accompanying text promises to be second only in value to the plates. There is to be a general introduction, by Professor Curtius, and from him, if from any one, we may look for a brilliant and suggestive exposition of the historical significance of the Cypriote antiquities. Volume I., which is to contain objects in marble, alabaster, and stone, large and life-size statues and statuettes, busts, heads, bas-reliefs, votive offerings, and sarcophagi, is to have a special preface by Dr. Samuel Birch, of the British Museum. Vol. II. is to contain bronzes, silver and gold ornaments, rock crystal, glass, and engraved gems, and is to be prefaced by the writer, who has already contributed so much to the elucidation of the Cesnola antiquities, Mr. A. Murray, of the British Museum. Vol. III. is to contain terracotta statues, heads, busts, horsemen, chariots, lamps, vases, inscriptions. Every one who is following M. Perrot through his delightful history of Phœnicia and its dependencies which is issuing weekly from the press will rejoice that the preface to this third volume is to be by his hand. In addition to these prefaces each object is to be fully described in accompanying letter-press, and so far as possible explained. The promise of the work is very great; its execution we shall hope to notice later.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE British Archæological Association opened their forty-first annual meeting at Tenby, on Tuesday last, under the patronage of H.R.H. the Prince of Wales, and the presidency of the Bishop of St. David's.

A better president it would have been impossible to select than the joint author of Jones and Freeman's "History and Antiquities of St. David's," and the sole author of "Vestiges of the Gael." Thirty-four years ago the Bishop of St. David's, then the Rev. W. B Jones, drew attention to the fact that an immense number of place-names all over Wales refer to Gaels; from this and other evidence he deduced a theory that the Gaelic or Irish branch of the Keltic family preceded the Kymric or Welsh. This has been abundantly confirmed by ethnologists and philologists; and it is now pretty well established that the Gaels were the vanguard of the Ayran race, and preceded their Kymric cousins, not only in Wales, but over the continent of Europe. It was the "Vestiges of the Gael" that paved the way to this interesting discovery.

The members of the Association assembled in the Town-hall at two o'clock, when they were received by the Mayor (Mr. W. H. Richards) and the members of the Town Council. His Worship, in the name of the Corporation, expressed the pleasure they all felt in welcoming the British Archæological Association and their Right Rev. President to the ancient borough of Tenby. He then withdrew, making way for the President, who delivered his opening address, of which we here append a considerable portion, which we take from the report in the *Times*:—

I suppose we may, with sufficient accuracy for our present purpose, make a rough five-fold division of material antiquities according to date. I think it will not be inconvenient to classify them as primeval, Roman, post-Roman, mediæval, and post-Reformation, the last being, no doubt, a very awkward term, but I do not know how to express the notion better. The name, however, is unimportant, and the more so that I do not intend to refer to any memorials of that period. I have already said that the division is a rough one; the distinction of periods is not clearly defined, and they sometimes overlap one another. For it is plain that certain antiquities, which we call primeval, may date from or even after the Roman occupation of Britain. Some of the early Christian monuments, which we call post-Roman, may have had their origin during that occupation, although I do not suppose that any of them did. It is very hard to say where we are to place the beginning of the middle age, although it is perhaps not so hard to distinguish between the decay of Roman and the development of Mediæval art, while the latter did, as a matter of fact, linger on in some places even into the seventeenth century. Still, I think we must be content with the classification which I have made, for lack of a better. In primeval remains, Pembrokeshire is unusually rich; but, although the district in which Tenby stands is not without them, they are most abundant in the northern and north-western parts of the county. They may be divided into villages, fortresses, sepulchral remains, and early roads or trackways. A good specimen of the first class was discovered not many years since on Stackpole Warren, and to this the attention of the Association will be directed at its present meeting. Fortresses occupy many of the peninsular headlands of the Pembrokeshire coast, and many eminences in the interior. Some of them are of great size and complexity, and show considerable military skill. In some cases we have the fortress and village combined. Perhaps the best example of this combination in South Wales is visible in the well-defined village fort on St. David's Head, where the foundations of the circular houses, forming a considerable group, are defended by a system of concentric walls, of which the masonry forming the face is in some places well preserved. Of primeval remains, intended originally as places of sepulture, most conspicuous are the cromlechs. In this class of antiquities the county is particularly rich, as regards both their number and the importance of individual examples. The great cromlech at Pentre Ievan, in Kemes, which ranks very high among those which are known to exist, the cromlech at Longhouse, in Dewisland, that at Dol Willim (not in Pembrokeshire, indeed, but just beyond the limits of the county), and that at Burton, in Roose, ought to be mentioned specifically. The stone circle is commonly associated with the cromlech, as part of the same arrangement. Antiquities of this class are most abundant in the northern part of the county, in the neighbourhood of the Preselly range, of the Pencaer hills, and the St. David's rocks. I do not learn that at any place in Pembrokeshire there have been found stones with those mysterious markings, which have so greatly puzzled archæologists, which appear to be widely diffused through various parts of the world. Of sepulchral remains of another class,—barrows, tumuli, carneddau, and so forth,—I believe there is good store in the county. Two in the immediate neighbourhood, viz., Carew and Norchard Beacons, were opened immediately after the Cambrian meeting in 1851, and the results are given in the "Archæologia Cambrensis" of that year. Another, situated on Stackpole Warren, will, it is hoped, be examined during the present meeting. Of ancient roads I have not much to say. One seems to run along the ridge of the Preselly Mountains, and its course is marked in the Ordnance Map. I traced another in the neighbourhood of St. David's, and what I found there may be read in the history of that place. I have little enough to say about Roman things. I do not know that there is any trustworthy evidence that the Romans ever got into Pembrokeshire at all. We find material traces of them in Cardiganshire and in the upper part of Carmarthenshire; and, although I am not aware that any Roman remains have been found there in modern times, I suppose there is no doubt that Carmarthen occupies the site of a Roman town. But I see no certain evidence of Roman occupation further west than that place. Well, then, what about Menapia, the site of which is to be visited by the Association, or by what remains of it, on the 11th inst.? When I last went to look for Menapia it was supposed to be under I do not know how many feet of blown sand, so I have no doubt it is quite safe, if it ever existed. But what is the evidence of its existence? Richard of Cirencester, or the ingenious person who wrote under that name. On the whole it would seem most likely that the name of Menapia is simply modified from that of Menevia, the Latin name (and, no doubt, a Latinised form of the ancient Celtic name) of the place of which I have the honour to be bishop. The Ordnance Map finds a place for another station of Richard's,—"Ad Vigesimum," but does not indicate any actual remains. Nor have I ever seen any trustworthy evidence to show that anything of Roman make has been at any time discovered in the county.

After speaking of the period between the Roman and the Mediæval, and of its monoliths and incised crosses, the Bishop observed,—I come now to Mediæval architecture, and begin, of course, with sacred buildings. I may safely say that there is no real Norman church architecture in Pembrokeshire, or, with one exception, in the three south-western counties of Wales. The sole exception, so far as I am aware, is the fine chancel arch of St. Clears, in Carmarthenshire. Probably, during the period in which this style was in vogue, our churches were very poor and small, while the country was unsettled and a battleground of races. There is nothing of this date even at St. David's. Of course, it exhibits alterations, additions, and insertions of various dates down to the beginning of the sixteenth century, and its history, as it has to be read in the traces of these numerous changes, presents an interesting, and at the same time a difficult, problem to the archæologist. But I cannot dwell upon these points in detail at present, nor have I any right to anticipate what will, no doubt, be brought before some of you more fully on the spot. I will only say this, that while the cathedral church of St. David's takes a low rank in point of actual dimensions among the minsters of this country, I know of nothing in the world so impressive. The wild country which surrounds it, the sense of isolation, the neighbourhood of the sea, and the consciousness of its being on almost every side of you, the marvellous picturesqueness of the ruined buildings in the midst of which it stands, undoubtedly enhance the influence of the impression which it produces when it is first seen from without. But the effect of the exterior, which must be admitted to depend in some degree upon these accessories, is far less imposing than the first view of the interior on entering by the south porch, above all, in the low light of the evening. The complicated richness of the Romanesque mouldings, the deep and solemn colouring of the native stone, the strange and fantastic details of the flat ceiling and its pendants, and (now) the painting, gilding, and mosaic dimly visible within the darkened choir, combine to render this one of the most striking architectural views in this country, or anywhere. But, again, I must not anticipate. The chief conventional churches in Pembrokeshire, at all events of which any remains exist, are St. Dogmael's, Monkton, Pill, and Haverfordwest priories. Of these, two only come within the scope of the Association at present, Monkton and Haverfordwest. The former, the nave of which is in use as the parish church, and the choir of it is intended to restore, is utterly unlike anything I ever saw in the way of proportion. It is a long aisleless choir attached to a long aisleless nave, and having a large chapel to the north of the choir, forming, however, a distinct building. In fact, it looks like three churches in contact, and perhaps it really was so; for although it is most difficult to say exactly how the opening from the nave into the choir was managed, there are symptoms which incline me to believe that it was little more than a doorway, so that the choir and nave would have the appearance of being (what they, no doubt, were, as regards their use) two distinct churches. At Haverfordwest the ruins do not give any certain indication of what the church was like; but I should infer from what I have seen that it was a cruciform church of the thirteenth century, certainly without aisles, and probably with a central tower. This was a not uncommon Welsh arrangement for important churches,—witness the abbey church of Talley, and the minster of Llanbadarn-fawr, in Cardiganshire. The two most important parish churches in the county, architecturally, are St. Mary's, Haverfordwest, and St. Mary's, Tenby. The former is quite one of the most interesting churches in Wales, and nowhere,

perhaps, in the principality is there better detail. The latter is striking, but of a somewhat unusual type in Wales. Its ground-plan and arrangements partly resemble some of the larger Cornish churches. None of the churches which I have mentioned, with the single exception of Monkton Priory, exhibit the characteristic features of Pembrokeshire parish churches. This singular type is found, as a rule, only within the English-speaking districts of the county, and I believe no specimens of it are found within those districts on the shores of St. Bride's Bay. Their main features are tall and slender towers, generally diminishing as they rise, a general rudeness of masonry, and internally much vaulting, with side-chapels and squints, and many holes and corners, and a general effect of cavern-like obscurity. Then we come to another class of antiquities, both numerous and conspicuous in this district. Pembrokeshire is a perfect paradise of castles. Not to mention others, three remarkably interesting ones are within easy reach of this place, — Manorbier, which is, perhaps, the most picturesque of the Pembrokeshire castles, especially when looked at in connexion with its surroundings. Carew, which is the most complete, and which (like Kenilworth) contains portions which mark the castellated manor-house rather than the castle, properly so called, and Pembroke, the Queen of South Welsh castles, and certainly one of the most impressive masses of building I have ever seen. One more castle must be specially mentioned, both on account of its inherent interest and because some of those who hear me are to pay a visit to it next week. I mean Picton, which presents the unusual feature of a Mediæval fortress (for it was a real fortress, and not a mere castellated manor-house) remaining in the occupation of the ancient family which owned it down to the present time. Considering that it is at this time a convenient mansion, to which a large addition was made early in the present century, there has been far less destruction of its original features than could have been expected to be the case. Of domestic remains of the Middle Ages there are, in addition to minor buildings and fragments to which I need not now refer, but which are numerous, two great habitations of my predecessors, one undoubtedly, and the other (in part, at least) very probably, the work of Bishop Henry Gower. The palace at St. David's is quite one of the best pieces of Mediæval Domestic architecture in the kingdom. Its style and arrangements are peculiar to itself and to two other buildings commonly attributed to the same prelate, while it presents to the archæologist the unusual spectacle of a great Mediæval house, partially ruined indeed, but otherwise left very much as it was built. It dates from the early part of the fourteenth century, and exhibits few, if any, traces of later addition or change. I suspect the secret of this to have been that my predecessors never found St. David's a convenient or perhaps a very comfortable place to live at, so that they did not care to adapt it to the requirements of their own times.

Sir James Picton returned thanks to the Bishop for his excellent and learned address, but took exception to his views on the Roman question. Mr. Morgan seconded the motion.

Mr. Lambert then gave a short but lucid paper on the Maces of Tenby, Pembroke, and Haverfordwest. Those of Haverfordwest were the oldest, dating back to 1630; one, however, was a recent copy. Pembroke owned two, made in 1632. Tenby's were of the date of 1660, and bore the crown, which was added after the Restoration. All of them were in a terribly dilapidated condition, mended apparently by a tinker with tin. Battered, bruised, and broken, he begged his worship the Mayor to entrust the Tenby insignia to his care, and promised, in case he would do so, to have them restored in a fitting manner.

When the proceedings in the Town-hall were concluded the party, under the guidance of Mr. Edward Laws, hon. local sec., adjourned to the gardens of the White Lion Hotel, whence a good view of the interior of the town walls may be obtained. Formerly Tenby had four gates. Three have disappeared, including the northern or Carmarthen gate, which Leland commended as "the most semeliest as circulid without, with an embatiled but open roofid tour." The west gate, which still remains, was built on much the same plan. It is a semicircular bastion, pierced with four arches, and in the wall which closes it in behind is the gateway. These arches were each defended by a portcullis, "*ex solido ferro*," as Leland says. The bulk of the tower is out of all proportion to its elevation, and it was never roofed. The battlements have been walled up in order that a narrow chamber made in the wall, and running round it, might be covered. This is, of course, modern work; formerly it was the alure, and afforded a defence for archers or musketeers, for whom loops are provided. Any tyro can see at a glance that the fortifications of Tenby were erected at different times; the walls on the northern and western sides are in a fair state of preservation, though somewhat disfigured by modern doorways, &c. In these are eight towers, six circular and two rectangular; in the wall to the north of the western gate is a niche of Decorated work, and on the southern side a tablet inscribed A° 1588 E R 30, showing that the Armada scare stirred up the local powers to repair their walls. The fortifications on the eastern and southern sides ran along the top of the cliff, and were, therefore, not of such a substantial kind as those undefended by nature. These have almost disappeared, though one circular turret remains on the southern side. Oddly enough, the fortifications on the Castle-hill are comparatively flimsy; a round tower and sallyport defended the entrance. Its little keep, which crowns the apex of the hill, is partly round and partly square; it seems rather to have been intended as a watch-tower than a fortification, and appears to have formed one of a chain. Of these, one on the Burrows still exists; another stood behind the cemetery; a third is to be seen at Ivy Tower, about five miles away. Although Roman coins as early as Domitian have been found in Tenby, and the Welsh recognised it as Dinbych y Piscoed, or Fish Littlefort (to distinguish it from Denbigh in North Wales), and the Norseman honoured it as Daneby the Danes town, we do not get much satisfactory information concerning its early days. In 1108 a small detachment of immigrant Flemings were sent to this place by Henry I., and in all probability they were the builders of the earliest portions of the wall. In the year 1150 Meredudd and Rhys ap Gwffyd took Tenby, and put its inhabitants to the sword, in revenge for a poaching fray in Amroth woods. Five years afterwards a new batch of Flemings were sent by Henry II. to take the place of the slaughtered men; these were annihilated by the sons of the Lord Rhys in 1188, and after that the church and town lay ruinous for sixty years, a few men-at-arms being its only inhabitants. Then Warine de Mountcheusy, who had married the heiress of the Earls Mareschal of Pembroke, rebuilt walls and church, and bestowed great store of plate and jewels on the latter. In 1457 Jasper Tudor reconstructed the walls, building a footway, 6 ft. broad, on the inner side, so that the sentinels might patrol the town; and he gave the defences to the mayor and corporation for ever. These good folks repaired the walls, as has been seen, in the Armada year. In 1643 Tenby received Lord Carbery, the Royalist Lieutenant-General of South Wales, rather sulkily, but Langhame and Poyer, the Parliamentarian leaders from Pembroke, retook it after a severe fight in 1644. It remained in their hands until, dissatisfied with the treatment they received from the Independent party, they ran up the Royal standard on Pembroke Keep and Tenby Castle Hill. This brought down Cromwell on Pembroke and Horton on Tenby, who took the places and dismantled them both.

After viewing the walls and tower, the Association passed down Froy-street (debating by the way whether this place was named after the *fleur-de-lys*) to a ruinous building now used as a cellar, which once formed the chapel of a Carmelite convent, founded in 1399 by one John de Swynemore. In it a female skeleton was dug up some few years ago, and in one corner is a sort of tomb, evidently made up with fragments from other tombs and portions of the building; on this is inscribed the date, 1730, and the builder's name, James Eynon, who seems to have been a joker, for he goes on to dedicate his bogus tomb to King Hezekiah.

The entrance to this convent was through an archway facing the west door of the church. This archway is clearly Tudor.

At this point the Association were taken in charge by the Rev. George Huntingdon, rector of Tenby, who conducted them over St. Mary's Church. The tower is capped with a spire, an unusual circumstance in Pembrokeshire. This is evidently a later addition, being Decorated, and built of Caen stone. The tower springs from the south aisle of the chancel. There is no clearstory, but the mullions of its windows were discovered in the chancel wall some years ago during repairs. A flight of ten steps leading up to the altar has a very good effect. The south porch has openings east, west, and south. The outer wall of the north choir aisle is askew. This has rendered it necessary to build pointed arches at the east end of the church and broad segmental ones at the west.

Remains of the old church, destroyed by the Welsh in 1188, may be detected by an examination of the plinths of the pillars. On the eastern side of the north door is a tomb, on which there is a female effigy, clad in a flowing robe, with short sleeves, under a cinquefoiled canopy. A chin-cloth, or barbe, covers the head. This tomb is believed to be not later than the first half of the fourteenth century, and is considered to be the oldest in the church, but that of Thomas White, the friend and protector of Henry Tudor, is, without doubt, the most interesting. It is situated at the east end of the south aisle, under the arch which divides it from the chancel. On it lie two male recumbent figures, which are clad in fifteenth-century costume; their hats hang over their left shoulders, to their girdles hang gypcières, their feet rest on talbots, their heads on peacocks. Thomas lies to the east, his brother John to the west. The church is undergoing a restoration (Mr. J. P. Seddon, architect); this work will not in any way affect the interior of the building, but greatly improve the exterior, as a tumbledown brick vestry will be replaced by stonework, though the general appearance is not enhanced by a hideous brick chimney.

Mr. Loftus Brock, Secretary of the Association, gave an excellent and lucid description of the church, showing how it had grown from a small cruciform edifice into its present lordly proportions. This, he considered, took place when it was rebuilt by Warren de Mountcheusy.

Colonel Bramble then led the party round and examined and expatiated on the numerous and interesting monuments.

After leaving the church the members examined some curious old buildings in Crackwell-street, which gave a notion of what Tenby was in the sixteenth century; its most noticeable feature seems to have been a want of elbow room, land "within wall" being very valuable. This led apparently to great overcrowding of buildings, and probably of their occupants. The expedition ended up on the Castle Hill, many of the party entering the little local museum, in which a very creditable loan collection proved an additional attraction; the more so as Mr. De Gray Birch gave a thorough and exhaustive discourse on the seals and charters of the three boroughs of Haverfordwest, Pembroke, and Tenby; these he considered to be invaluable. He especially drew attention to an impression of a seal of James I., attached to a Tenby Charter, of which only one other copy is known to be in existence. He much regretted the neglected condition in which he found these invaluable documents.

The report of the proceedings will be continued in our next.

Value of Building Sites at Rotherhithe. What have for several years been known as the St. Helena Gardens at Rotherhithe are now being converted into a building estate, and last week forty-seven of the plots on the estate were let by auction on building leases, at the St. Helena Tavern, on the estate, by Mr. F. J. Bisley. The property is situated in Eugenia-road, near the new railway stations, and in the immediate neighbourhood of Southwark Park. The plots were let in eight lots, several of the lots containing six plots, and the remaining lot five plots. Each plot contained a frontage of 15 ft. 6 in., and they were offered on leases direct from the freeholder, for a term of ninety-nine years from June, 1882. There was a large attendance, and the whole of the lots were readily disposed of at prices varying from 25*l.* to 27*l.* each, representing an annual ground-rent for each plot of about 4*l.* 10s. At the same time nineteen houses on the estate, in carcass, and partly finished, were offered for sale, and realised 930*l.*

Illustrations.

ACCEPTED DESIGN FOR THE NEW WAR OFFICES.

WE give this week the Park view and the two principal plans of the accepted design for the proposed New War Offices, by Messrs. Leeming & Leeming. The competition having been obviously in the main a competition of *plan* rather than of design,—for on no other supposition can the presence of some competitors among the selected nine, and the omission of others, be reasonably accounted for,—we may call attention to the fact that the plans are now first published on such a scale that their arrangement is intelligible and the lettering of the rooms legible.

The following tabular statement of the classification of rooms, as supplied to the candidates, will serve more or less as a key to the plans of all the sets:—

THE WAR OFFICE.

A. Staff.
B. Surveyor-General's Department.
  B 1. Director of Artillery.
  B 2. ,, Supplies.
  B 3. ,, Contracts.
  B 4. Inspector-General of Fortifications.
C. Central (or Secretary of State's) Department.
  C 1. ,, ,, ,,
  C 2. ,, ,, ,,
  C 3. ,, ,, ,,
  C 4. ,, ,, ,,
D. Finance Department.
  D 1. Finance Department.
  D 2. Auditors.
E. Military Department.
  E 1. Military Secretary.
  E 2. Adjutant-General and Quartermaster-General.
  E 3. Intelligence Department.
  E 4. Deputy Adjutant-General R.A.
  E 5. Deputy Adjutant-General R.E.
  E 6. Army Medical Department.
  E 7. Military Education Department.
  E 8. Commissary-General's Department.
  E 9. Principal Veterinary Surgeon's Department.
F. Miscellaneous.
  F 1. Army Purchase Commission.
  F 2. Judge Advocate General.
  F 3. Pay Office. Commissariat and Transport and Ordnance Store Corps.
  F 4. Pay Office. Army Hospital Corps.
  F 5. Army Sanitary Committee.

THE ADMIRALTY.

A. Board-room Suite and Secretary's Department.
  A 1. Board-room Suite.
  A 2. Military Branch.
  A 3. Intelligence Branch.
  A 4. Naval Branch.
  A 5. Civil Branch.
  A 6. Legal Branch.
  A 7. Registry Branch.
  A 8. Record Office Branch.
  A 9. Copying Branch.
B. Hydrographer's Department.
C. Transport Department.
D. Victualling Department.
E. Controller's Department.
  E 1. Director of Naval Construction.
  E 2. Engineer-in-Chief.
  E 3. Director of Naval Ordnance.
  E 4. Store Branch.
  E 5. Dockyard, Ship, Gunnery, and Registry and Copying Branches.
F. Accountant-General's Department.
  F 1. First Division.
  F 2. Second Division.
  F 3. Third Division.
  F 4. Fourth Division.
  F 5. Fifth Division.
  F 6. Sixth Division.
  F 7. Greenwich Hospital Division.
  F 8. Auditors.
G. Director of Contracts Department.
H. Director of Medical Department.
J. Director of Works Department.
K. Naval Reserves Department.
L. Royal Marines Department.
M. Inspector of Naval Schools Department.

As will be seen, Messrs. Leeming place the Secretary of State and the First Lord's rooms as "pendants" to one another at the extreme angles of the Park front on the first floor, with their respective staff members grouped about them. The other departments appear conveniently grouped, and the plan has the merit of being geographically simple and easy to find one's way in. Its defects are narrow courts, and rooms with insufficient window accommodation placed at the ends of the rooms. The main design is unquestionably picturesque in general effect and grouping, but it is not a *great* building, and none of the improvements in detail which are quite possible, and some of which have been suggested in these columns already, will make it so. But there,—we have given up having great buildings now, especially for Government purposes.

The view is engraved by Mr. J. D. Cooper.

THE DECORATION OF ST. PAUL'S CATHEDRAL.

THE accompanying sketch shows the modification I propose in the design by Alfred Stevens for the decoration of the cupola of St. Paul's Cathedral, together with my own designs for the decoration of the subjacent parts of the dome.

The full-sized cartoons are now fixed in the dome itself on the south side, opposite to the modification of Stevens's design by Mr. E. J. Poynter, R.A., which is on the north side. The storiation,—which was arranged by Mr. Edmund Oldfield, M.A., one of the sub-committee appointed on the 9th of June, 1877, to make preliminary arrangements for the decoration,—has been fully explained before in connexion with Mr. Poynter's work, illustrated on the 5th of July last. The two modifications may be described as a Painter's version and an Architect's version. Each version shows two "ribs," with the space between, and covers about one-sixth of the cupola. As I understand the case, it is not a competition between persons, but an experiment to ascertain treatment. Omitting minor details, there is not scope for much originality in either version, and it is rather a question of suitability.

The sketch shows about half of the dome, in order that the articulation of the whole may be better understood.

Principles.—The endeavour has been, as far as possible, to avoid the *rococo* elements, borrowed from the Louis XIV. style by Grinling Gibbons and the other carvers who were employed on the fabric; and, while keeping to the pure Italian practised by Stevens, to introduce no new element not in accordance with Sir Christopher's views as seen in his works and shown by engravings and other documentary evidence. Further, to use no architectural feature not suitable to the interior of a roof, and no painted perspective such as would suggest recession, and cause loss of the surface, but to preserve the "pattern-effect" of Stevens's design, and to arrange such a modification as, while providing for the storiation, should satisfy the architectural and other requirements.

Distance.—The most favourable point of view is at the commencement of the barrel-vaults under the dome-supports: from this position the whole of the opposite side of the cupola is visible. And at this point the nearest part of it, *i.e.*, the base, is over 200 ft. distant. The minuteness resulting from this may be judged if the engraving be held at a distance of 16 in. from the eye.

Scale.—To suit the great distance, the architectural work has been kept simple, and the initial modulus of the figures large. The sitting figures typifying the early Churches, together with that of John himself, would be, if upright, 16 ft.; the attendant angels are 12 ft. 6 in.; the figures in the lower series of visions would also be 12 ft. 6 in.; the demi-figures in the lower rank of rib-roundels, and the figures in the upper series of visions, would be 10 ft.; the demi-figures in the upper rib-roundels, and the Elders, would be 9 ft. Thus a gradual decrease in modulus will prevent the decorative work having the effect of "dragging the cupola down." (The Apostle in the roundel of podium is, I now find, too large; but that is a matter of detail which would be easily corrected.)

Divisions.—To ignore architectonic considerations, and decorate the cupola with one picture, as has been suggested, would be, not decoration, but annihilation, of the surface; the disastrous effects of which may be seen at Parma and several other churches which were decorated in the Decadence. Unless the cupola were decorated with one subject covering the whole 16,000 square feet, there must be a series, the several pictures of which would be axial with the architecture below; and hence subdivision becomes necessary. In addition to this logical necessity, there is the further advantage which should not be lost sight of,—that it brings the cupola into scale with the rest of the building.

Circles.—Stevens's base of subdivision is the circle; the fact, that every plane section of a sphere is a circle, being the key to his design; and to him is due the credit of first seeing and using this apparently self-evident fact. In addition to being the typical shape for cupola decoration, the circle is a perfect and mysterious shape, well suited to contain "visions," as to give the simplicity and sublimity consonant with religion. The circular frames intersect with the vertical lines; and, being as strongly pronounced as they are, take away the preponderance of the vertical element. The figure compositions in them will be designed by Sir Frederick Leighton and Mr. Poynter, and hence they are only smudges of colour.

Ribs.—I have deviated from Stevens in the treatment of the "ribs" between the circles. They are treated, not as constructed features built up in several stories, but merely as continuing decoratively the eight solid bays of the peristyle; for which a precedent may be found in the semi-dome over the altar, where Wren has applied ribs over the pilasters dividing the surface. The decreasing "gores," resulting from this "rib" treatment, do not extend so far upward as the eye of the cupola, but are stopped below the annular frieze of the Twenty-four Elders, where the radius of the cupola changes, according to Mr. Penrose's discovery; and they are not so small as the much-criticised divisions of St. Peter's. The strong lines of colour in the latter are further avoided by gilding the ribs. They will, therefore, have just sufficient emphasis to steady the vision-circles, and to assist in defining the profile of the cupola, without destroying its perfect homogeneity. They contain representations of some of the imagery used by John:—the candlesticks (more properly lamps), the eighth being the typical branched one; the stars, the eighth being the sun and moon; and the martyrs' palms.

Pattern.—In connexion with the subdivision it will be noticed how the masses and colour of the roundels, thrones, and niches, being in regularly set-out positions, make a pattern which "runs" not only over the cupola, but also through the peristyle and podium, and thus suggests the unity which existed in the older domes before peristyles had been interpolated between the spandrel panels and the cupola.

Thrones.—The axial thrones form one of the most characteristic features of Stevens's design. The details in my version are studied from the window-dressings in the clearstory; and I have connected them with the attic pedestal for simplicity of design.

Attic.—This pedestal was proportioned in height to the order of the peristyle, and broken over the pilasters: and the cupola design was thus "tied" to the existing architecture, by Stevens.

Angels.—The Seven Churches, judging from the reproofs and promises to each, may be taken as typical of Christendom. The "Aggelloi" represents the sorts and conditions of men written to by John; and there seems great fitness in placing them round the base between the Lower things and the Consummation. The attendant angels would not be individualised, but rather considered as messengers, directing, or bearing symbols of the Promises:—the Tree of Life, the Safety from the second Death, the New Name, the Power over the Gentiles, the White Garments, the Pillar of God, and the Grant to sit on the Throne.

Elders.—The annular frieze round the eye of the cupola contains the twenty-four Elders, who "surround the Throne." Those on the west side would be represented as sitting on golden thrones, and from them on each side round towards the east they would be singing the song and casting themselves down and "worshipping." Thus they avoid continuing the vertical lines of the ribs, but would instead give a composition sweeping round the circle.

Cherubim.—Cherubim and Seraphim are introduced floating in space; they carry the idea of Praise through the design, and are useful, decoratively, in helping to define the rotundity of the cupola.

Lantern.—On the ceiling of the lantern at the top of the cone, I would suggest the vision of the Throne. I say "suggest," because it is impossible to depict it. I would use a dark blue ground for the "darkness which surrounded the throne"; on this and over the four windows at the cardinal points I would place the "four living creatures"; between them and over the four intermediate windows the words of their hymn,—"Holy," "Holy," "Holy," and "Amen";

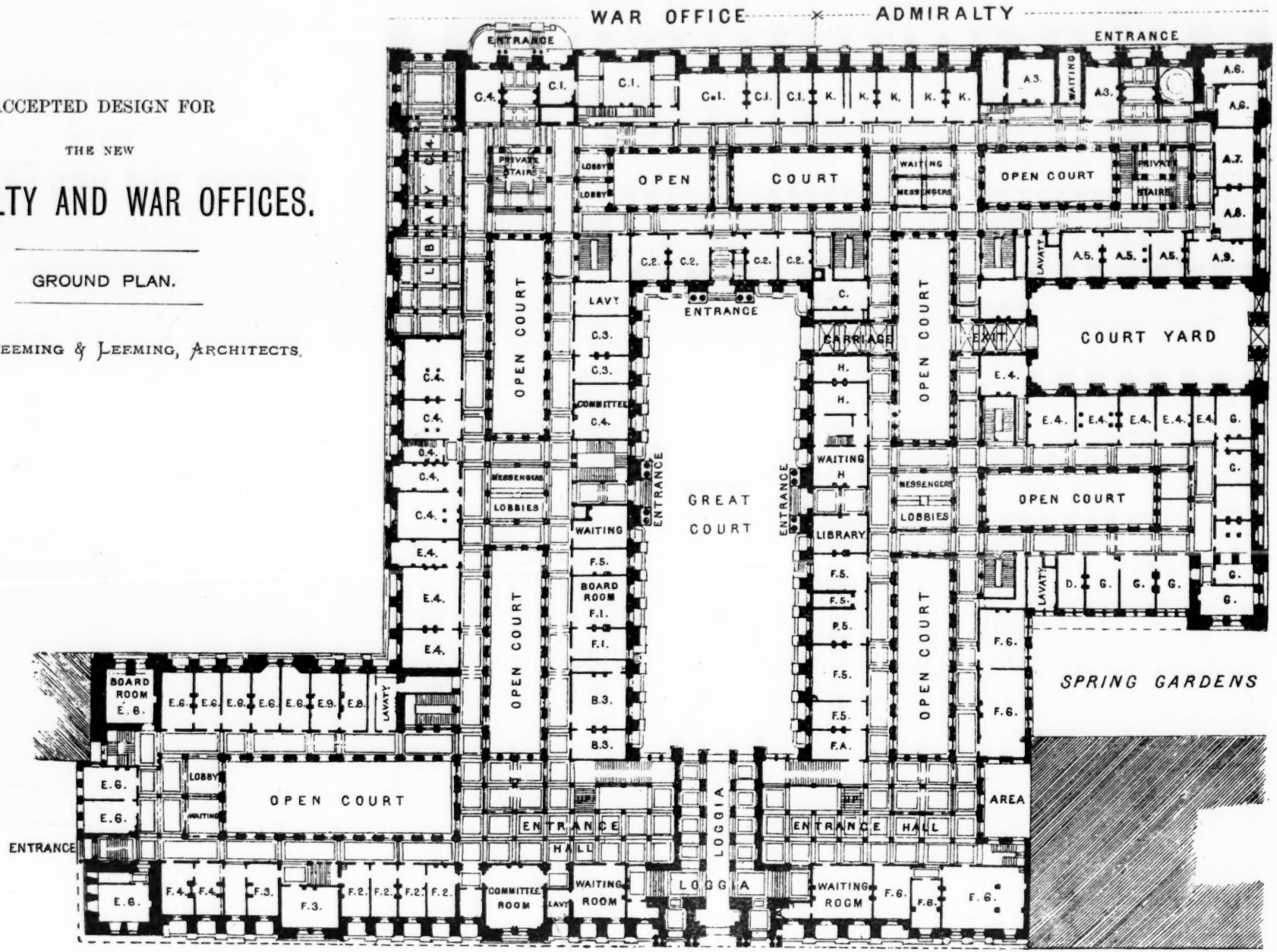
ACCEPTED DESIGN FOR

THE NEW

ADMIRALTY AND WAR OFFICES.

GROUND PLAN.

MESSRS. LEEMING & LEEMING, ARCHITECTS.



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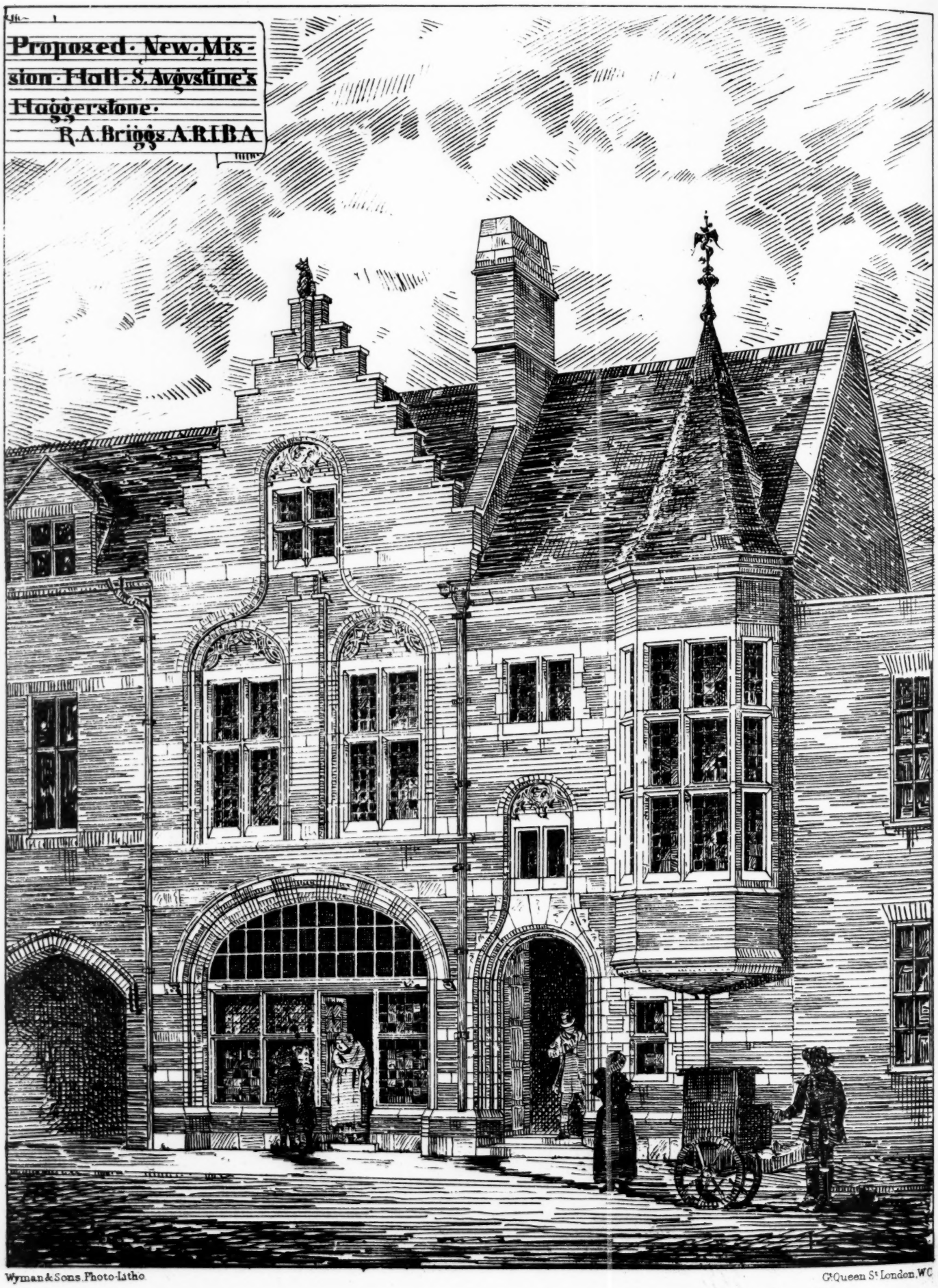

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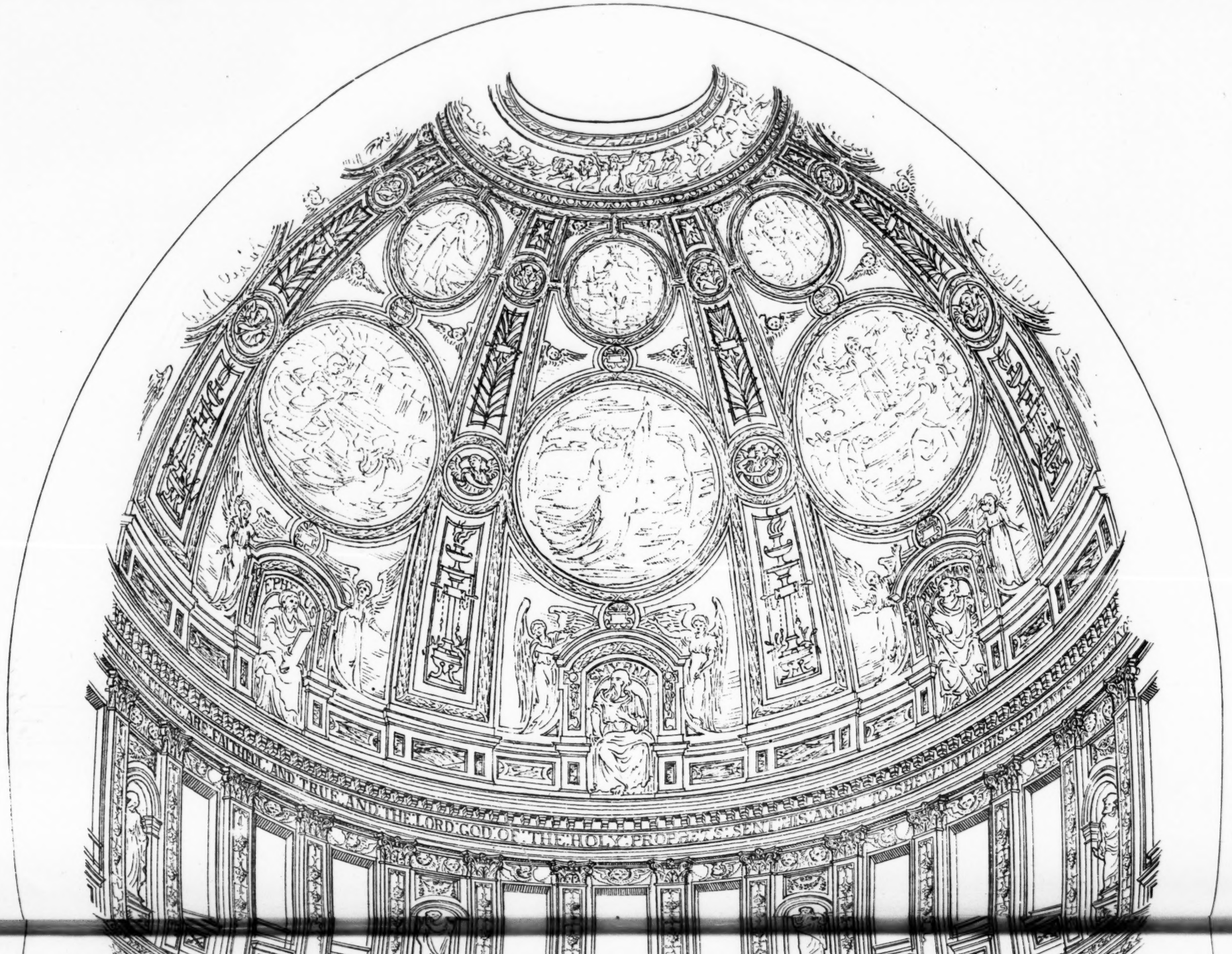
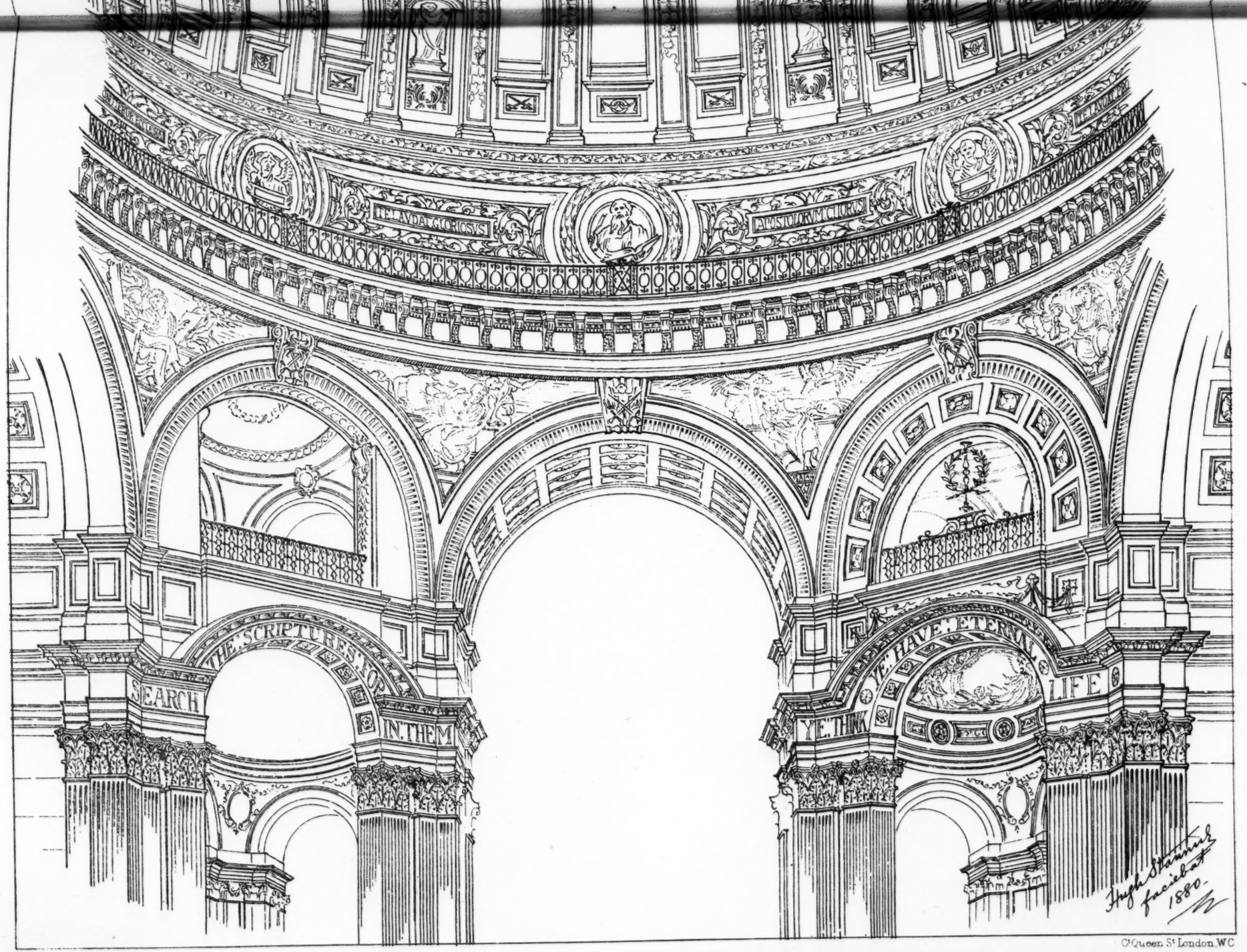

THESE SAYINGS ARE FAITHFUL AND TRUE: AND THE LORD GOD OF THE HOLY PROPHETS SENT HIS ANGEL TO SHEW UNTO HIS SERVANTS THE THINGS


TE LAUDAT GLORIOSUS
APOSTOLORUM CHORUS
SEARCH THE SCRIPTURES FOR IN THEM
YE THINK YE HAVE ETERNAL LIFE
Hugh Stannus faciebat 1880.

Wyman & Sons Photo-Litho

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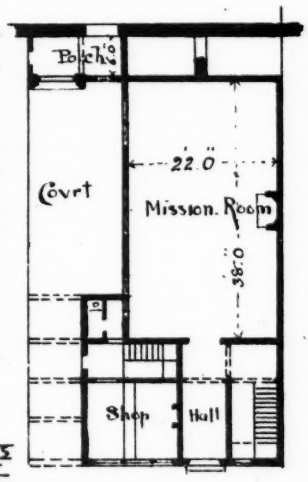
ST. PAUL'S CATHEDRAL: Design for Decoration of the Dome, by Hugh Stannus, A.R.I.B.A.

Proposed New Porch and Mission Room at S. Augustine's Haggerstone

R. A. Briggs A.R.I.B.A. Architect.
56 Wellington Buildings
Chelsea. S.W.



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ACCEPTED DESIGN FOR THE NEW A

View from St. James'

MESSRS. LEEMING & [illegible]EEM

EW ADMIRALTY AND WAR OFFICES.

m St. James's Park.

& BEEMING, ARCHITECTS.

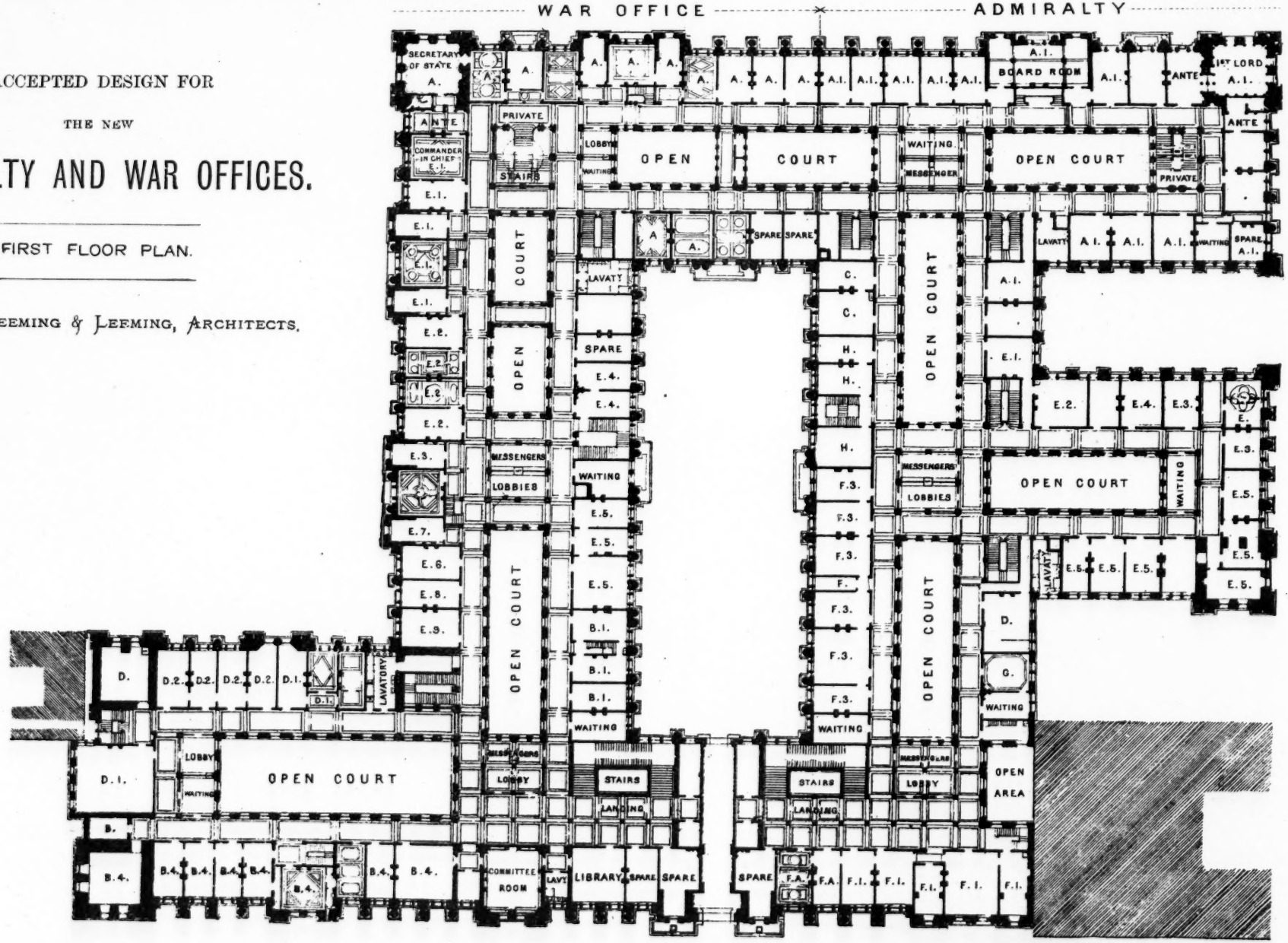
ACCEPTED DESIGN FOR

THE NEW

ADMIRALTY AND WAR OFFICES.

FIRST FLOOR PLAN.

MESSRS. LEEMING & LEEMING, ARCHITECTS.



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and between and below the eight windows I would represent the "lightning which came from under the throne." Thus the visible portion of the cone would be decorated; and by placing the living creatures on the domical portion, the distortion of "*sotto-in-su*" would be avoided.

Peristyle.—The peristyle is treated as an integral portion of the dome, with the object of "carrying-down" the cupola treatment: to this end the pilasters have applied ornaments, similar in character to those above, or adapted from other ornaments in the cathedral. Mr. Penrose has designed those on the north side; and I am responsible for the treatment of those on the south side. The inscription which I suggest is taken from chap. xxii., verse 6, of the Apocalypse.

Podium.—The manner in which the eye, on entering the cathedral, runs along the apse, ignoring the Crux, has been pointed out as a defect. The podium, which is the only portion of the dome visible at this point, gives an opportunity for remedying this by making an important central feature, which may arrest the eye, and suggest an axial line of something above. This is attempted by the axial roundels set in the belt or chain of rich colour that appears to enclose the cupola, and serves as a connecting-link between the golden colour above and the graver colour beneath. A typical Apostle is introduced: the demi-figures at the other cardinal points would be typical representatives of the "Prophetarum Laudabilis Numerus," the "Martyrium Candidatus Exercitus," and the "Sancta Ecclesia per Orbum Terrarum"; and the intermediate roundels would be occupied by angels with the Sanctus. One half of the cartoon is shown with a tablet and portion of the sentence from the Te Deum, "Te laudat gloriosus Apostolorum chorus"; and the other shows another experiment with simple ornament. I am responsible for this design; the podium treatments on the north side are by Mr. Penrose.

Stone Surface.—In the colour treatment the aim has been to retain the unpolished stone for all constructive features up to the level of the podium, and only to introduce the mosaic and marble inlay in panels; and the gilding on enrichments as now existing from the time of Sir Christopher. It might be washed (*not scraped*), and treated with a silicate that should keep it at the beautiful pale yellowish brown which is its normal colour. Any treatment by painting or removing its *patina* would take away all that lends dignity of colour, and would destroy the indefinable charm of mystery and space. For these reasons I would take the stone as the key of the colour scheme, and avoid the "white and gold" used in assembly-rooms, &c.

Gold Ground.—The glorious golden ground, doubtless suggested by S. Marco, is another of Stevens's most valuable suggestions. It is the only ground which will "tell" in the normal gloom of the dome; and the figures should, as far as possible consistent with the composition, silhouette upon it. The tint (at the commencement of the cupola, and in all lower parts) should be that of "old gold," because more beautiful in colour, and more in accord with the old stone, and also because, if the colour of new oil-gilding be taken, the mosaic remaining unchanged while the gilding became redder, in course of time the harmony would be lost. In the cupola the tint of the gold ground should be gradually modified to sea-green gold as it ascends.

Decorative Colour. — The colour of the decorative work should be on very simple schemes, so as not to lose dignity and breadth. It should be more neutral, and the chiaroscuro more solid, in the lower parts of the cathedral below the arches; and gradually gain in fulness of colour and lose in solidity, as it ascends to the podium. This should be the richest band of colour in the whole building. Below there would be the gradual crescendo in richness from the stone-colour and neutrals; and above, the cupola would "lose colour" in a gradual decrescendo, till it became almost *golden*. Thus should we not take away the splendid mystery of Wren's crowning work.

Mosaic.—The cartoons have been designed and painted as if for execution in mosaic; and an attempt has been made to observe the technical limitations of the material, and to obtain the necessary simplicity and directness of composition shown at Sta. Maria Maggiore, S. Appolinare Nuova, Galla Placidia, and in some of the middle-period work in S. Marco.

Relief.—In my version I have shown the possibility of applying mouldings in actual (low) relief to the surface of the cupola: a practice which has been often done in Italy with the happiest effect, *teste* the small transept cupolas of St. Peter's. They have been made by Messrs. George Jackson & Sons in their "Fibrous plaster." They are very easily fixed, and, by giving true lines they materially simplify the setting-out of the mosaic, and make more manageable sizes for the cartoons. I am solely responsible for this suggestion of applying actual relief; but I wish it to be clearly understood that it is by no means a *sine quâ non*, as the design might as readily be executed entirely in mosaic; the relief would, however, give a more architectonic character by having a real potential value instead of mere chiaroscuro.

Galleries. — On the right-hand side of the sketch a suggestion is submitted for treatment of the quarter galleries, while the left-hand side shows their present form. On my return from Italy in December, 1878, fresh from studying the finest domes, I was more than ever struck with the unfortunate effect of these. It has been often alluded to by architectural critics, and various expedients have been suggested. After much consideration on the spot I arrived at the solution shown, which embodies five suggestions:—(*a.*) To carry the panelled arch-face over the galleries, with inner archivolt resting upon the stone break-forward under the railing; the panels to agree in treatment with the first rows of coffering in the adjacent barrel-vaults. I would strongly object to any tampering with Sir Christopher's construction; but this suggestion does not cut away a stone; it is added to the existing construction, and could be made, if desired, to give additional strength, both really, and (what is of importance) apparently. It would take away four or five available seats in each gallery; but it would destroy the eight axes and make only four, thus emphasising the Crux. It also gives opportunity for uniting the colour treatment of the four arms of the barrel-vault with each other, by the colour picked in the coffers of the arch-faces and in those of the vaults.

(*b.*) To add festoon ornaments, in gilt gesso, to the attic under the railings, in order to disguise the hard cutting lines which come down upon the curved pediments, and to lead the eye pleasantly to the horizontal lines. There are many precedents for this in Wren's work.

(*c.*) To add a thin baluster-column and garland, of gilt bronze, in each arch, for the purpose of "taking the eye across" and (apparently) filling up the void: this would not obstruct the view of any one in the galleries, as the garland would be above the line of sight. This intention,—to take away the effect of the gaping void,—has been often achieved by the expedient of a gilt grill in the opening; but I venture to think the above is a better method.

(*d.*) To remove those portions of the ornamental cornice projecting inwards, in order that the cornice and frieze of the main order may be carried from the horizontal over the curves without interruption, and to affix an inscription (John v. 39) in gilt bronze letters to that portion of the frieze on the four oblique faces; this is suggested because, by its easy division into four portions, it gives unity to the supports of the dome.

(*e.*) To sub-panel the four semi-domes under the galleries. At present each of these has a superficies of about 360 ft., while the spandrel-panels have only 240. They are thus more important by reason of their largeness than their adventitious existence would justify. I would therefore propose to cut off a row of horizontal panels, of the same height as the above-mentioned frieze, which should be axial with the arches below, as shown; and also to make a margin round the remaining space, leaving the best-seen portion for the pictures. By this expedient these soffits would be brought into scale with the rest of the building. The divisions may be executed either in mosaic or with relief mouldings. These pictures might be either scenes from the life of St. Paul, or, if a cycle of events from his life be reserved for some position nearer to the level of human life, with some of the "great company" of angels who are ever singing the song of the redeemed, and are come down to lead our lower anthems. These five suggestions were not asked for; and I am solely responsible for having devised them and for having shown them on the sketch. They might be tried experimentally very cheaply by chiaroscuro painting on thin boarding. It is with all admiration for the great genius who raised the pile, and in all humility that I venture to publish them, and to suggest that experiment might be made to determine if they be emendations or not.

Time.—In conclusion, for the information of those who take an interest in the work, I would beg to say that the best time for seeing the two versions of Stevens under equal conditions is when the sunlight comes through the windows on the west side of the peristyle, about five o'cl ck each afternoon, in a week's time.

HUGH STANNUS.

PROPOSED MISSION-HOUSE AND PORCH, ST. AUGUSTINE'S, HAGGERSTON.

WE give an illustration of these intended buildings, from the drawings of the architect, Mr. R. A. Briggs. As no principal porch was designed when the church was built some years ago, it has been thought advisable that one should now be added.

The Mission-rooms will be used for parochial meetings, &c., and on Sundays the classes for girls will be held.

A sexton's house is provided, with a shop on the ground-floor, where books will be sold. The present entrance under the clergy-house will still be retained, but the inner court will be widened.

The Mission-house will be built of red Suffolk bricks and Portland stone dressings.

THE PRIVATE BILL LEGISLATION OF THE SESSION, AND PUBLIC WORKS.

AN analysis of the private Bills which have been passed during the session just ended shows that about two-thirds of the entire number of Bills promoted have received Parliamentary sanction, the total number presented being 294, of which 203 were successful. The railway projects embraced about one half the total number of Bills of all kinds, being 149, for the construction of 1,045 miles of new railway, at an estimated cost of 60,968,195*l.* But in addition the Money Bill of the Hull, Barnsley, and West Riding Junction Railway and Dock Company, which was presented at a late period of the session, brings up the aggregate estimated cost of the whole of the Bills promoted to 62,468,195*l.* Of this class of Bills, 82 have been passed, being a little in excess of one-half of the whole, the capital expenditure sanctioned by the Bills amounting to 20,438,700*l.*, for the construction of 318 miles of new railway and other works. It should, however, be stated that 40 of the Bills sanctioned are in respect of extension of time, abandonment, or arrangements, leaving 42 Bills having reference to the actual construction of works. Ten of these successful Bills were promoted by companies to be incorporated for the construction of entirely new lines of railway, 123 miles in length, at an estimated outlay of 5,612,000*l.* The most costly of these is the Barry Docks and Railway project, involving an expenditure of 1,600,000*l.* for making a dock, with a lock, basin, an entrance channel, and breakwater, between Barry Island and the mainland of Glamorganshire, and for the construction of thirty-three miles of railway. The next in order of the new lines in amount and mileage is the new railway from Preston to Lytham and Blackpool, the estimated cost of which is 680,000*l.* for the construction of twenty miles. Amongst the other new lines is that from the Kingsbury extension of the Metropolitan Railway at West Hampstead to the Hendon Station of the Midland line, a length of four miles, at an outlay of 240,000*l.* The additional powers obtained by several of the great companies involves the expenditure of a very large amount in new works, that of the Midland Company being 1,600,000*l.*, which includes the construction of thirteen miles of new railway; the London and North Western Company, 1,437,500*l.*; the Manchester, Sheffield, and Lincolnshire, 1,066,000*l.* for the construction of twenty-eight miles of new railway; the North-Eastern, 660,000*l.*, for twelve miles of new railway; the London and South-Western, 660,000*l.*; the Caledonian, 634,000*l.*, for the construction of eleven miles of new railway; the London, Chatham, and Dover, 626,000*l.*, for seven miles and other works; the Great Western, 600,000*l.*, for twelve miles; the South-Eastern, 430,000*l.*; and the Lancashire and Yorkshire,

420,000*l*. The Mersey Company have also obtained powers for expending 400,000*l*. in the construction of two miles of additional lines in Birkenhead. The powers obtained by the Metropolitan District Company enable them to expend 180,000*l*. in forming a short junction line at Hammersmith, and also in the construction of a subway from the South Kensington Station to the Royal Horticultural Gardens. The Session has been remarkable for the rejection of an unusually large number of railway Bills connected with the metropolis.

Of the thirty tramway Bills promoted for the construction of 173 miles of tramways in different parts of the country, at an outlay of 3,747,910*l*., the number sanctioned is fifteen, or exactly one half of the Bills applied for. In these Bills the construction of seventy-seven miles of tramway is sanctioned, at an outlay of 2,003,300*l*. Seven of these Bills are in respect of tramways to be constructed within the metropolitan area, and include the West Metropolitan Company's Bill for the construction of tramways in the parishes of Acton, Hammersmith, and Norwood, fifteen miles in length, at the cost of 350,000*l*.; the London Southern Tramways Bill for the construction of tramways, five miles in length, in Lambeth, Newington, Clapham, and Brixton, at an outlay of 150,000*l*.; the North Metropolitau Company's Bill for the construction of six miles of additional tramways in East London, at an outlay of 125,000*l*.; also Bills promoted by the London, London Street, North London, and Lea Bridge, Leyton, and Walthamstow companies for constructing fifteen additional miles of tramway, at an estimated cost of 127,000*l*. The South Eastern Metropolitan (a new company) have likewise obtained powers to construct four miles of tramway in Greenwich, Deptford, and Lewisham, at a cost of 75,000*l*. Amongst the successful Bills under this head is one for constructing ten miles of tramway in the neighbourhoods of Manchester, Bury, and Rochdale, at a cost of 750,000*l*.

Twenty of the successful Bills were in respect of gas and water supply, six being in connexion with gas and fourteen with water supply. The Bills sanctioned for the construction of new waterworks authorise the expenditure for that purpose of 853,900*l*.

Seventeen Bills relating to piers, docks, and harbours were passed. Amongst them were Bills for the construction of piers at Gravesend, Folkestone, Ventnor, and Weston-super-Mare; also a Bill promoted by the London and St. Katharine's Dock Company for the construction of a new entrance to the Royal Albert Dock at Galleon's Reach; together with a Bill promoted by the North Sea Fisheries and Harbour Company, empowering the company to make a tidal harbour, dock, piers, and other works at Sutton, in Lincolnshire.

Nineteen town improvement Bills likewise received Parliamentary sanction, under which the several corporations and local authorities are authorised to widen existing streets, and construct new streets, with increased powers over the construction of buildings. The powers obtained by the Brighton Corporation under their Bill are of a very comprehensive character. They are authorised to construct a running wall, promenades, piers, and landing-places, with tidal, swimming, and other baths. They are likewise empowered to erect shelter arcades, conservatories, and other works on the seashore, in connexion with the construction of lifts for carrying passengers up the face of the cliff, from the seashore to the Marine Parade. The Bill likewise authorises the corporation to erect a wholesale provision market, new municipal offices, and an arcade or bazaar. It also transfers to the Corporation 105 acres of land known as Tenants' Down, to be laid down as a recreation-ground for the use of the public. The Dewsbury Bill empowers the Corporation to erect a new town-hall, municipal offices, court-house and gaol, and museum, together with the construction of public baths, and a public park. The Birkenhead Bill enables the Corporation to widen thirty-one streets, and to form other new streets; also to purchase and take down 131 insanitary houses.

Appointments.—The Haverhill Local Board has appointed Mr. F. Kemp to fill their vacant office of Surveyor and Inspector of Nuisances; and the Town Council of the borough of Eastbourne have appointed Mr. W. T. Vale as clerk of the works to their new Town-hall and Municipal Buildings.

THE FIFTH INTERNATIONAL CONGRESS ON HYGIENE.

THE present congress has been, perhaps, a little less brilliant, but certainly more business-like than its predecessor, held at Geneva two years ago, and which was fully described in these columus. Much good work has been done, and resolutions voted that will not fail to influence Continental Governments. The Governments of Belgium, Bavaria, Brazil, Spain, Austria, France, Italy, Roumania, Germany, Servia, Turkey, Switzerland, Bulgaria, the Argentine Republic, and the United States of America, have all sent special delegates. The French were as usual the best represented, and the English last on the list. This was all the more to be regretted on this occasion, as we have been strongly attacked and accused of sacrificing the health of Europe to the promotion of our commercial interests. The Dutch themselves, fortunately, were not so bitter against the English, and though on certain occasions they might advocate the establishment of quarantines, they, nevertheless, recognised how exaggerated the present outcry has been.

As affecting the preservation of health, almost every word said at the congress may be considered of interest by our readers; but the subjects that had a specific and direct bearing on the interests represented by this journal are far more limited. We will not reproduce the speeches of welcome, the eloquent harangues on the great mission of sanitary reformers. These we will leave to the imagination of the reader, or to those who choose to read the official report of the congress when it is published. Suffice it to say that all that could tend to make foreigners welcome, and to inspire them with a high and disinterested sense of their duties, was uttered with much feeling at the opening of the congress by its president, Dr. de Beaufort, Senator, and Dr. Overbeek van Meijer, its honorary secretary. These sentiments were repeated in the evening at a reception given by the Municipality of the Hague to its visitors.

On the following day the congress set to work in real earnest. The first section, after a stormy debate, invited the Dutch Government to take the initiative in convoking an international congress on the cholera question. This congress, it was further suggested, should appoint a permanent commission on epidemics, and proceed to codify in an international sense the laws affecting hygiene. To this latter proposal it was insinuated England would never submit, for fear her commercial interests might be compromised; and there being no Englishman present, it was the Russian delegate who took up our cause and sought to defend the honour of England. The Count Paul de Suzor, of St. Petersburg, objected that England, on the contrary, of all European nations, had made the greatest sacrifices for the preservation of public health. It had in spite of the cost, drained all its principal towns, and at the present moment if Englishmen could calmly contemplate the progress of the cholera, it was precisely because they had been such zealous promoters of public hygiene.

In the fourth section on the same day, Dr. H. Napias, Inspector of Factories, and delegate of the Municipality of Paris, read a lengthy and studious report on the duties of the State with respect to the health of the working-classes. Opening a voluminous manuscript, he remarked that he took his appointment as reporter to the congress on such a subject as a reward for his past labours. His object was to give some indications that might serve as a basis for industrial legislation of an international description. M. de Fréycinet had laid down the axiom that all industries are insalubrious. Two centuries previously Italian reformers had argued in the same strain. The position, the air, the dust, the whole surroundings of the workshop, were unwholesome. The State was, therefore, bound to step in and see that what was bad in itself should not be made worse by neglect. In 1848 the Chamber of Commerce of Rouen had protested against unlimited freedom in such matters, and denounced the immoral effects of unconstrained competition. But at the same time it must be recognised that it was a manufacturer who first proposed a law on the subject, and that such motions had received the warmest support from M. Waddington and others, whose interests might be supposed to lead them into the opposite camp. The more enlightened among the employers recognised that it was their duty to limit the number of killed and wounded in the army of labour.

Dr. Napias then reviewed with admirable brevity and completeness the legislature of the different countries, rendering high homage to what had been done in England. The Austrian law watched the health, working hours, salary, and apprenticeship of the working classes. The German law affected the health of workshops, and limited the labour of children. The Belgian law only regulated unwholesome manufactories, and the work of children, except in mines, was not restricted. The Danish law only touched unwholesome industries; though Article 5 stipulated that manufacturers must submit to the health authorities. In Italy each province had a law of its own, principally to protect the work of women and children. In Portugal, Spain, Roumania, and Sweden, the law related to the outside of the factory, the harm it might do to the neighbours, and little was said of the workmen who toiled within. But Servia has given us an admirable law protecting workmen, which, with the legislation of Switzerland, deserves to be universally studied. In France, the law is drawn up to protect children; and, if a factory is unwholesome, the employer only need send the children away to legalise his position. Fortunately, the Consultative Commission of Hygiene and the Minister of Commerce were now engaged in preparing a better law. All European laws were open to criticism, and each nation should borrow the best clauses from the Acts of Parliament of neighbouring countries. A good law should not only protect the neighbours against dangerous or injurious industries, but the workmen themselves. Workshops should be rendered as wholesome as dwellings, and special precautions taken against special dangers, the Government offering every encouragement to health-saving inventions. With respect to accidents, Dr. Napias would only exercise severity with regard to measures of precaution, which he would render obligatory under harsh penalties. The law should also watch over the lodging of the workmen, which must perforce be rendered wholesome. It should be a penal offence to let a tenement unfit for habitation. It is no use reforming the workshop if the workman's home does not receive equal attention. Actually, sanitary authorities were nowhere armed with sufficient powers. At the same time, Dr. Napias thought that the State, having provided the workman with a good general and technical education, and having watched over his health during childhood, owed to the adult nothing else but his liberty.

To this, it was objected, that a large section of the population, that section precisely which caused the greatest difficulty to sanitary reformers, had not received these educational advantages. What with competition and lack of skill, this residuum could only obtain starvation wages, and it was impossible to expect them to pay the high rents charged for healthy dwellings. If the poor man is to live a wholesome life, some one must supply the money this would cost, and the money would only be forthcoming by trampling under foot the rights of property and the freedom of contract. The difficulty could not be overcome except by a law enacting that adult males should not work over a limited number of hours; that all private rooms where work was done should be placed under factory inspection; and finally that a minimum wage must be established, so that all who worked should earn enough to live in a healthy manner. These might be revolutionary proposals, and certainly they produced considerable sensation, but they were presented as the only possible logical outcome of the problem of the housing of the poor.

Several other speakers described various model dwellings, and M. Malherbe, an engineer, delegated from the town of Liège, repudiated all State intervention, claiming that absolute freedom was the true solvent for every difficulty. To this Dr. Napias replied that absolute freedom existed in Belgium, and that was why women and children still toiled below ground in the coal-mines. Thus concluded the debate on this portion of the proceedings.

At a subsequent meeting it was demonstrated by numerous experiments on animals that consumption is contagious, but that, the virus being principally confined to the sputa of the patients, the chief measures taken should be

adopted with a view to prevent the contamination of clothing and furniture by the expectorations. Spittoons charged with liquid disinfectants should, therefore, be used instead of handkerchiefs. In the same manner the congress insisted on the boiling of milk, the thorough cooking of beef, as cattle often suffered from tuberculosis; and that disinfection should not be limited to dry heat, but that a jet of steam must be introduced into the stove. A great deal was said against the danger arising in the trade of rags, and Dr. Roth, representing the British Society for the Prevention of Blindness, did good service in showing that more than half the cases of blindness now existing might have been prevented if taken in time. This is a question to which the attention of architects will be directed more and more every day. The supply of light to dwelling-rooms will not long remain an optional matter. Rules will ultimately be laid down stating per candle-power the amount of light necessary. Dr. Cohn, of Breslau, showed us how the light of the sky could be accurately estimated and compared with the amount of light existing in any part of any room. The complicated but most ingenious instrument employed for this purpose cannot be easily described without a drawing. We shall, however, probably return to the subject, and for the moment it suffices to say that now it is as easy to estimate in a moment the candle-power of light in any place or position as it is to ascertain the temperature. Hence in future it will be as practical to lay down rules with respect to the amount of light to be given as with respect to the temperature that should be maintained, and the facility of verifying as great in both cases.

M. Emile Trélat, in one of the afternoon general meetings of the congress, took up the question of the atmosphere and internal conditions of dwellings. Most of the members of the congress were present, being anxious to hear what the eminent Parisian architect had to say on this important topic; also vague rumours were floating about as to the strange and novel theories M. Trélat was about to propound.

M. Trélat commenced by alluding to Dr. Rochard's admirable lecture on the money value of human life. Dr. Rochard, he remarked, wished to increase the duration of human life by suppressing epidemical diseases. M. Trélat, on his side, proposed to economise life by reducing all lowering causes, all circumstances that tended to debilitate a population. Among these causes he must place in the foremost rank our homes. Our dwellings should shelter us, but they too often proved a mere snare, in which we were slowly poisoned. If we failed to obtain the necessary warmth with the required volume of pure air, our homes became a danger, a menace to our existence. His object, however, was not to deliver a lecture on warming and ventilating, but rather a lecture against what was done in this respect. It would be his painful duty to attack both Pecklét and General Morin, whose memory he revered, but whose science was now out of date. Pecklét had studied how things are burned. In his time very little fuel was used. The whole population was impoverished by long wars. They had large chimney-places, but very small fires. The trouble many people took to light a fire warmed them more than the fire itself. Pecklét calculated that under these circumstances the huge chimney absorbed 95 per cent. of the heat coming from the small fires then in vogue; for the chimneys had been built before the war, when people could afford to fill them. Pecklét then conceived the idea of bringing the air in from the outside, and warming it by making it travel behind the fireplace before it entered the room. This was the foundation of his great success, and the contrivance was all the more appreciated as it allowed the inhabitants to close up the windows. Having done this much, it then occurred to him that it would be even still cheaper to warm the air downstairs at one single fire, and then distribute it all over the house by means of flues. Thus the calorifère was invented, and for forty years these doctrines had been followed. For forty years experiments of a most minute and difficult nature were made. Dr. Rochard had blamed architects; but why did the doctors let the architects grope in the dark for forty long years? Why did not the medical profession discover at an earlier date what were the sanitary principles that should govern the warming of dwellings? He then related how various architects had tried model systems of warming and ventilating, and had failed, and condemned the breathing of warmed air, on the ground that it contained less oxygen. Also air-flues soon became dirty, the sun could not reach them, and the dust they contained helped to develop germs.

The most agreeable feeling was that experienced on a cold fine morning, when our bodies were warmed by the direct rays of the sun while we breathed cold air. Our rooms should be fed with cold pure air, taken direct from the outside, and warmed with radiating heat from an open fire-place. The walls should be warm and reflect heat, the windows should be warmed, all solid bodies in the room should receive and radiate heat; but the air that we breathe should not be warmed, and must come in direct from the outside. He remarked with pleasure that many of the English artisans' dwellings had small openings in the wall which allowed the cold street air to enter direct into the room.* It was astonishing how much cold the human body could stand if it also enjoyed counteracting heat. Thus the bivouac fire enabled the soldier to pass a comfortable night in the open air, and M. Trélat wished that rooms should be treated on the same principle,—a boundless supply of outdoor cold air, with radiated heat to counteract its chilling effects.

As discussion was not allowed at the public meetings these propositions could not be debated; but their general tenure was challenged. The matter was then referred to the second section, but M. Trélat was unable to attend, so that the point at issue is postponed to the next congress, when an attempt will in all probability be made to show that M. Trélat's proposals are not practical. The entrance of air taken direct from the outside during winter would be felt by many to such an extent as to lead the inhabitants of the dwellings thus treated to block up all the openings that supplied the air.

THE LIVERPOOL AUTUMN EXHIBITION.

THE Liverpool Corporation's eighth annual exhibition of pictures opened to the public at the Walker Art Gallery on September 1st is one of uncommon and, we might almost say, historic interest in the annals of English art. Never before has there been brought together under one roof a collection which represents in such an ample and generous manner the leading art institutions of the country. Eight large well-lighted and well-proportioned rooms have recently been added to the gallery, the *tout ensemble* of which now may be said to rival that of Burlington House. Of these new rooms some, and of the older ones some, have been severally and separately allotted to the following institutions and societies, viz., the Grosvenor Gallery, the Society of Painters in Water Colours, the Institute of Painters in Water Colours, the Hibernian Academy, the Institute of Painters in Oils, the Dudley Gallery Art Society, the Society of Painter Etchers, the Collection of Architectural Designs, and the Liverpool Academy. Each society or institute appointed its own executive committee to hang and arrange its special room, and in addition to the foregoing there are several spacious chambers devoted to what may be called the Liverpool Autumn Exhibition proper or ordinary.

We cannot attempt to do more than describe the impressions derived from a cursory run through the show. Entering Room A (the largest of the chambers devoted to the autumn exhibition ordinary), the first picture which catches the eye is Mr. C. Van Haanen's "Afternoon Coffee," a brilliant bit of Parisian life depicting a number of girls in varied colours gossiping and refreshing themselves in a dressmaker's work-room. This popular work has been given the place of honour on the far wall, and is for the first time seen to full advantage. Close by, and equally well hung, we come upon "Husband, Children, Home," Mrs. S. Anderson's striking and pathetic representation of a victim to the Ischian earthquake. For dramatic conception there are few pictures in the exhibition to challenge this. On the upper side of the door and well taken care of, is Mr. Frank Goodall's "A New Light in the Harem." As one of the popular works in the Academy, this will naturally attract considerable attention, and those who see it are not likely to overlook Wm. Stott's "*La Baignade*," which hangs just above it, a charming study by one of the younger school of impressionists. Mr. T. B. Kennington's merits have been previously recognised by the Liverpool Corporation, and in the present exhibition his "Lap of Luxury" is given a prominent place on the line. Another young and aspiring impressionist, Mr. Stanbope Forbes, contributes "Preparation for the Market," and no visitor can fail to enjoy "Autumnal Spoils," the restful picture of a girl in a boat picking bulrushes growing in a quiet creek. Before quitting Room A we desire to draw special attention to Miss M. Bernard Hall's "*Pauvre Père*," a somewhat painful subject powerfully executed, which might fairly have been hung a little nearer the line.

The central feature of Room B (also a portion of the ordinary exhibition) is Frank Goodall's gigantic "Flight into Egypt," which has been judiciously placed on the end wall, and, consequently, looks better than it did in London. We also note a great improvement in Mr. Holiday's "Dante and Beatrice." The artist must have done a good deal of work upon this picture since it was exhibited at the Grosvenor, although even now it is not quite what it might be. The Liverpool Corporation are purchasing "Lorenzo and Isabella" as a sample of Millais's earlier method. In doing so they are securing a very remarkable work, though in an eccentric style; a picture which makes us regret that the painter should not devote his wonderfully developed technical power to works of similar aim and equally intense feeling, instead of squandering it on portraits sometimes little worthy of his genius. They have also bought J. R. Reid's "Rival Grandfathers," from the Grosvenor Gallery Room. The latter promises to be one of the most popular pictures of the Liverpool season.

Room C is devoted to the water-colours of the ordinary exhibition, and contains a good deal of very nice work, notably R. H. Carter's "Nut-brown Maid," and Joseph Nash's gloomy but powerful dead duellist ("Satisfaction"), which attracted considerable attention at the Institute last spring. Immediately beneath "Satisfaction" hangs "La Belle Amour," a charming study by Mr. S. Melton Fisher. The room is strengthened generally by some pleasing landscapes of Cockram's, whose work is made rather a feature of.

Turning out of Room C we find ourselves in the portion of the exhibition devoted to the Royal Society of Painters in Water-Colours, who really seem to have managed to get together a wonderfully choice collection. Glancing round, one immediately recognises several old favourities. It is years since Boyce has been so strongly represented. He exhibits no less than five pictures, some of them (notably No. 648, "Hulton Castle") being exceptionally fine. Mr. Albert Moore has only one small and somewhat insignificant work in the exhibition (No. 512, "An Alcove"). This seems a pity, as he was appreciated in Liverpool earlier than anywhere else. Amongst other interesting pictures in the Old Water-Colours Room may be mentioned Basil Bradley's "Lost," a vigorous hunting scene in which the hounds are full of life; E. Buckman's pathetic "Home," a weather-worn sailor and his young children standing by the wife and mother's newly-made grave; and Chas. Gregory's "Adrift," some travellers resting in a country churchyard. A large room has been placed at the disposal of the Grosvenor Gallery executive, who exhibit an average collection of works,—mostly well known. On the end wall in the place of honour hangs Calderon's marvellous "Aphrodite." A prominent place has also been given to Gregory's fine portrait of Miss Galloway, and close by we noticed Herkomer's somewhat sinister likeness of the popular war correspondent, Archibald Forbes. Richmond's portraits look well, and Mrs. Jopling's "Ellen Terry" is as attractive as ever.

Mr. G. F. Watts sends a new and decidedly quaint picture under the inexplicable title of "B. C. * * *" A far better name would have been "The First Oyster," for the artist represents two nude figures (presumably Adam and Eve) kneeling on a sandy shore amidst sea-weed and shell-fish. Adam has just swallowed an oyster and holds the shell in his hand, while Eve watches apprehensively for the consequences. Mrs. Collier's "By the Tideless, Dolorous, Midland Sea," is on all hands pro-

* Not by the will of the English artisan, certainly! Has M. Trélat's credulity been practised upon, or is this a grim jest?—ED.

nounced a remarkable picture for a lady to have painted, as we have already remarked when speaking of the Grosvenor Gallery in May; the flesh tints against the sand are put with a sympathy and subtlety beyond praise. Its only serious fault is a misleading and entirely unsuitable title. We were surprised to find none of Burne Jones's works in this room. Considering how much he owes to the Grosvenor, his absence is scarcely graceful.

The small room set aside for the works of the Liverpool Academy evidences that there are are several local artists of more than ordinary promise. In "Freja's Quest" (hung on the line), Miss Jessie McGregor has taken a distinct step; and marked improvement can be claimed for Mr. H. H. Stanton, who exhibits a breezy sea-piece. "Eventide," by Peter Ghent, also shows an advance on former work. Mr. Thompson Jones, on the other hand, fails lamentably to fulfil expectations. His "On the Guidecca" is not the sort of work that should emanate from an artist once considered so promising.

The Royal Hibernian Academy have sent a small collection of moderately interesting work. The President's (Sir Thomas Jones's) large picture of the Archbishop of Dublin attracts most notice, though connoisseurs in Irish beauty who go through the room thoroughly may not improbably prefer the same artist's "Molly Astore," a true daughter of Erin.

The Institute of Painters in Water-Colours have hardly made the most of the material available. Their collection requires inspection before you find out how good it is. During our somewhat hurried glance round, however, we were favourably impressed with "The Downs of Mount Harry," a tender, silvery landscape, by H. G. Hine; and some of Arthur Severn's work, notably a view of Edinburgh from the Nelson Monument, and the "Versailles" of Mr. Fulleylove, one of the most masterly painters of architecture of the day.

The great feature of the chamber appropriated by the Institute of Painters in Oils is Fantin's magnificent series of portraits of the French Impressionists. It is a pity this was not hung on the end wall, as it would then have given size and grandeur to the whole room. We were sorry too, to notice a pleasing landscape of Frank Walton's almost spoiled by being stamped upon by a heavy picture of Hacker's, which is, however, by no means destitute of merit.

In Chamber K we noticed a little landscape by R. A. Brockbank, which calls for a favourable recognition; and in L. I. Starr's "Oh, Sweet New Year," and Henry Schafers's "An Impromptu," should not be missed. "Sally in Our Alley," a clever bit of work, by E. Sherard Kennedy, has been rather cruelly skied; and a somewhat better place might fairly have been given to a carefully-painted portrait of a little girl, by Harold S. Rathbone.

VENTILATING APPLIANCES AT THE HEALTH EXHIBITION.

SIR,—In the remarks under this heading [p. 274, *ante*], it is stated that I show a system of ventilating apartments by "supplying air direct from outside to assist the combustion in the fireplaces." Now this is a mistake, as the fresh air from outside referred to is for the ventilation of the apartment, and is let in near the fireplace, so that while ventilating the room by the admission of fresh air, such may be done without persons sitting round, or near, the fire feeling a cold draught at their backs.

W. P. BUCHAN.

A PERIODICAL QUESTION.

SIR,—Can any of your correspondents kindly suggest anything that will rid a house of beetles, crickets, and cockroaches? I have some cottages troubled with these pests, and I am at a loss to know how to get rid of them. I shall feel greatly obliged for any practical suggestion. F. H.

A Day's Outing. — In connexion with Hampton's Home for the Blind and Aged Cripples, Webber-row, Waterloo-road, an excursion, in which some 150 sightless ones (representing nearly all branches of the building trades) with their guides took part, came off last week, under circumstances most favourable. The locality chosen by the authorities of the home was the ground attached to North Lodge, Morden, which the proprietor (Mr. T. North, of London-road, Southwark), kindly placed at the disposal of the excursionists.

PROVINCIAL NEWS.

Birmingham.—The town of Birmingham is now in possession of several arcades. They are all noteworthy, but without exception are in the Classic or Renaissance style of architecture. A new arcade, however, has been commenced (for Mr. C. Ede) in the Early Gothic style, situated in the important thoroughfare of Snow-hill, and nearly opposite to the entrance of the Great Western Railway Station. A number of old and dilapidated buildings will have to be demolished to clear the site. The arcade will run between two streets, viz., Snow-hill and Slaney-street, but at present it is not contemplated to open a public entrance into the latter street, a private entrance for the shopkeepers only being formed. The frontage to Snow-hill will consist of large shops, four stories high, divided by a bold Gothic arched entrance. Into the elevation towards Snow-hill, buff glazed bricks, Minton's tiles, parti-coloured stone, ornamental red brickwork and terra-cotta, ornamental metal work, &c., will be introduced. A large enriched centre gable, filled in with panelling, tiles, &c., will emphasise this front. The elevation to Slaney-street will be of a plain Gothic character. The shops in the arcade will also be of a somewhat plain design, glazed white brick facings, gauged brick arches, moulded brick cornices, bay-windows, &c., being introduced. The architect employed is Mr. J. Statham Davis, of Birmingham.——New Assembly-rooms for Edgbaston, at the corner of the Hagley and Francis roads, are approaching completion. The building, which is being erected for a limited liability company, is expected to be ready for use in a month or six weeks. The architects are Messrs. Osborn & Reading, of Bennett's-hill, Birmingham. The principal frontage of the new building is in Francis-road. The entrance will be through an enclosed vestibule, communicating with ladies' and gentlemen's cloak-rooms on either side, and opening into a spacious entrance-hall, from which a broad central staircase leads to a suite of rooms, consisting of a ball-room, 70 ft. by 40 ft.; a drawing-room (with a smaller drawing or card room adjoining), wide galleries, refreshment-room, and other apartments. The ball-room has a gallery for musicians and a stage, with green-room, dressing-rooms, and other accommodation. The room will, therefore, be available for private and other theatrical performances, concerts, and other entertainments. On the ground-floor, in addition to the entrance and the apartments appertaining to it, there are an ante-room and a supper-room, with serving-room, butler's pantry, and other accessories. The basement contains kitchen, larder, scullery, pantry, beer-cellar, heating-chamber, bakehouse, and other offices, besides apartments for the custodian and attendants. The building, with furniture and other contingencies, is estimated to cost 11,200*l.*, making, with the amount paid for the site, 16,500*l.*

Bristol.—Plans have been prepared for the erection of a parsonage-house in connexion with St. Matthew's Church, Moorfields, by Mr. Vincent W. Voisey, F.R.I.B.A.

Withington (near Manchester). — A Local Government inquiry has recently been held at Withington by Mr. J. Thornhill Harrison, M.Inst.C.E., one of the Inspectors to the Local Government Board, in reference to an application from the Withington Local Board for sanction to borrow a sum of 16,761*l.* Mr. Joseph Swarbrick, Assoc.-M.Inst.C.E., Engineer and Surveyor to the Board, explained the nature of the works proposed to be executed, and stated that they consisted of works of private and public street improvements, and works of the sewerage and sewage disposal; and that 4,787*l.* of the amount required was for additional works at the sewage farm at Chorlton-cum-Hardy, the total cost of the works upon which had been about 12,800*l.*

Oakham.—The new swimming-bath for Oakham school has been opened, and will no doubt be found to be a great boon to the boys, who now number over 120. It is situated within a short distance of the cricket ground, is 80 ft. long by 30 ft. broad, the depth graduating from 3 ft. 6 in. to 6 ft. It is lined with blue brick, with a smooth concrete floor; and the boarded inclosure includes a large dressing-shed, water-closet, &c. There is a wide asphalte pathway all round the bath, and the water is brought in by iron pipes from a neighbouring spring, and is always flowing through the bath, which is fitted with filter and proper sluices for cleansing purposes. The cost has been about 500*l.*, and the works have been carried out by Mr. Dean, builder, of Uppingham, Mr. R. Winter Johnson, of Melton Mowbray, being the architect.

SCHOOL-BUILDING NEWS.

Sheffield.—New Board schools at Huntsman's Gardens, Attercliffe, have just been opened by the Mayor of Sheffield. The school is on an entirely different plan from any previously built in the town. The Sheffield School Board has already in use one school building with a central hall, which is a parallelogram in shape, with class-rooms along the sides and ends. The school just opened has a central hall, but it is of polygonal form, with the class-rooms so arranged around it that they radiate from the eye of the head-master when he is at his desk. There are in the main building, which is a mixed department, twelve class-rooms arranged as above, and capable, by means of movable partitions, of being made to accommodate varying numbers of scholars, as those in the separate standards increase or lessen in number. The class-rooms, however, are square in themselves, in order that the desks may be of equal length; and another important feature is that left-hand lights are obtained for the classes at desks to a much larger extent than is generally the case. The school is fitted up with electric bells, and by an understood code the head master can, from either his private room or his desk in the school, signify his wishes to any of the teachers in the class-rooms and to the caretaker's house. The infants are placed in a separate building, which has a school-room and four class-rooms. In the lower part of the main building is an extensive gymnasium. The contract for the building amounted to 11,412*l.*, and the number of scholars accommodated is 1,250. Externally, the buildings are all of coursed stone, and covered with dark Westmoreland slates. The schools are warmed throughout by low-pressure steam apparatus supplied by Mr. W. Truswell, of Durham Foundry, Sheffield. The stone-carving, &c., is by Mr. Harry Hems, of Exeter; and the electric bells are by Messrs. J. Northam & Co., of Sheffield. The architect was Mr. C. J. Innocent (late Innocent & Brown), of George-street, Sheffield.

Smethwick. — New infants' schools are in course of erection in Crockett's-lane, Smethwick, for the Harborne School Board. The contractors are Messrs. Jeffery & Son; and the works are being carried out under the superintendence of the architects to the Board, Messrs. J. P. Sharp & Co., of Birmingham. The contract is about 3,000*l.* Drawings are being prepared for higher grade schools to be erected on a neighbouring site.

The Beckenham Public Hall. — A new public hall at Beckenham has just been completed and opened. The building has its main frontage to the Bromley-road, 65 ft. in length, 34 ft. in height to the parapet, and 55 ft. high to the ridge of a high-pitched roof. It is surmounted in the centre by an octagonal tower rising to a height of 74 ft. above the ground line. The principal entrance to the building is surmounted by an elliptical arch, with rich carving. The building, which contains two lofty main floors, with dormers in the roof, is faced with stock and red brick. Each floor has mullioned windows, those to the ground-floor being arched and deeply recessed. The return elevation is somewhat plainer in character. The building is approached along an entrance-hall 16 ft. in width and 34 ft. in width. The front portion of the ground-floor is intended to be let as offices. At the rear of this floor is a reading-room, also a billiard-room, besides coffee-room, cloak-room, and other apartments. A staircase, 15 ft. in width, leads to the upper floor, which contains the large public hall, 61 ft. long and 34 ft. wide, at one end of which there is a gallery extending the entire width of the hall, and at the opposite end a platform with space for the erection of an organ. The hall will seat an audience of 600 persons. In connexion with the hall there are ante-rooms, cloak-rooms, and dressing-rooms. In addition to the large hall there is another hall at the extreme rear of the building, 38 ft. long by 23 ft. wide. The cost of the building, which with the grounds, covers an area of 100 ft. by 80 ft., is about 5,000*l.* Mr. G. Vigers, of Frederick's-place, Old Jewry, is the architect, and Messrs. D. D. & A. Brown, of Camberwell, are the contractors.

The Student's Column.

HINTS FOR THE STUDY OF THE HISTORY OF ARCHITECTURE.—X.

FIFTEENTH-CENTURY GOTHIC.

IT might be supposed that, in a history of the typical styles of architecture, there is not sufficient distinction between the Gothic work of the thirteenth and of the fifteenth centuries to call for a separate article on each. Indeed, the change from the one to the other during the intermediate fourteenth century was, in England at least, so gradual, that the builders of that period were probably unconscious of the distinct results that they were producing.

The main difference lies in this: that whereas the earlier builders devoted their attention to the arrangement of the structural *bones* of the building, the later ones lavished theirs on its *skin*.

More than this: whereas a fully-developed thirteenth-century church has very much the same recognisable features in whatever country we may find it (with certain exceptions), the fifteenth-century churches in various countries differ from each other as much as they do from thirteenth-century work.

England exhibits, as has been mentioned in the last article, a thirteenth-century style of its own, and it is remarkable that when French influence was occasionally imported, as in the case of Westminster Abbey, the admixture of English art has produced a far more beautiful result than can be found in any French cathedral. Street, in his "Gothic Architecture of Spain," points out a somewhat similar result at Toledo, where, he says, the problem of vaulting a chevet has been more successfully solved than in any cathedral in France.

As a rule, however, thirteenth-century Gothic is very much alike wherever it may have been built under direct influence from headquarters, even in such a distant country as the island of Cyprus, as may be seen in Mr. Sydney Vacher's numerous illustrations to Mr. I'Anson's paper on that subject, to be found in last year's Transactions of the Institute. Where local peculiarities survive, such as in the triapsal plan of the church at Marburg in Germany (see p. 738 of Fergusson's Handbook), still the construction and details are French.

The Germans, indeed, were determined to outdo France itself by building a huge cathedral at Cologne. This building is illustrated in all the handbooks,—most profusely, of course, by Rosengarten, on p. 306 *et seq.*, and a view on p. 317. Fergusson tells us on p. 740 that it was begun about the year 1270-1275, and the choir completed by 1322. The entire church has only been completed within the last few years; fortunately from the original design, which has been preserved to work from. It has double aisles, and chevet of seven chapels, and transept and western towers crowned with spires,—everything complete and very correct. Surface richness begins to vie with constructional lines, the flying buttresses are pierced by monotonous rows of quatrefoils, the spires are covered with tracery, also pierced,—a treatment which is found in several German examples,—and the upper portions of the buttresses are also smothered with tracery. The change from the skeleton to the skin has set in.

The Germans ran their taste for open-traceried spires into the very extreme of tenuity, and insisted upon drawing them out to ridiculous lengths, as in the Sacraments Hauslein at Nuremberg, illustrated by Fergusson on p. 759, where the summit of its spire, being too high to stand upright under the vaulting, is bent round beneath it; a pretty fancy, but one at variance with strict architectural common sense; other spirelets, which have not to keep clear of obstructions, have nevertheless caught the infection, and bend their heads in meaningless fashion, until all notion of structural rigidity has disappeared from this piece of stonework. Simplicity, says Fergusson, is not the characteristic of the German mind. A difficulty conquered is what it glories in, and patient toil is not a means only, but an end, and its expression often excites in Germany more admiration than either loftier or purer art.

Soon the masons set themselves a more intricate task. At Chemnitz (see Fergusson, p. 760) there is a doorway around which the tracery is represented by the stems and branches of trees, some of the latter being chopped off. Here was another object in life. The idea was followed up in ordinary tracery, and the ends were duly chopped in every conceivable position. A mingling of these two crazes, such as may be found in many German interiors, gives one an uncomfortable admiration for their digestion of difficult problems.

The town-halls for which Belgium is more especially famous, retained, during the fourteenth and fifteenth centuries, much of the propriety of design that had been applied to them in the thirteenth century; the Cloth Hall at Ypres, of which the foundation-stone was laid in 1200, but which was not finished till 104 years afterwards, being a very grand and simple design, and even its elaborate successor at Louvain (1448-63), although somewhat crowded with dormer windows, is free from debasement in detail. A lofty central tower is a feature in most of these town-halls.

The Italians in the fifteenth century had begun to tire of Gothic. They erected two enormous churches at the end of the fourteenth century, St. Petronio at Bologna (only part finished), and the cathedral at Milan. The former with central bays, not only about 60 ft. across, but square in plan,—a huge dimension, unknown in true Gothic churches; the latter, said to have been designed by a German, but carried out under Italian influence, with a bastard result. The choir, says Fergusson, p. 780, is neither a French chevet nor a German nor Italian apse, but this part of the building, with its simple forms and three glorious windows, is perhaps an improvement upon both the methods of which it is compounded. The Certosa, near Pavia, also of the same date (1396), is internally worse than either. Externally, however, the galleries, of which we saw the beginning in the Lombard style, and other national features, render it a more successful building. When the façade was added in 1473, the Italians had said good-bye to Gothic; it is entirely in the Renaissance style, and the subject of this article is, in Italy, conspicuous by its absence.

Going on to Spain, where some remarkable churches were built during the fourteenth century with the buttresses brought inside to form side chapels and with the side aisles omitted, we find that the Gothic work of the latest period "became extraordinarily florid in its details, especially in the variety introduced into the ribs of the vaulting and the enrichments generally. The great cathedrals of Segovia and Salamanca were neither of them begun until the sixteenth century had already well set in. They are the two principal examples of this florid Gothic" (Smith's Gothic and Renaissance, page 140). The interesting element in Spanish Gothic is the infusion of Moorish (Saracenic) details which were skilfully combined with it. This may be seen in a survival of the cusps which we saw at Cordova in the eighth century, and they sometimes repeated a very satisfying feature of Moorish work, namely, the habit of inclosing an arch within a rectangular frame. The church at Batalha, in Portugal, is an extremely rich example in which this treatment is observed.

In France, after the first few years of the fourteenth century, which had produced the beautiful Church of St. Ouen, at Rouen, architecture was much neglected on account of the wars in which she was engaged; however, we find that she burst forth with pent-up vigour in the fifteenth. Like all other countries, she became florid in her architecture, her particular weaknesses, perhaps, being for "flamboyant,"—or flame-like,—tracery and extravagant dormers. See the Palais de Justice at Rouen illustrated on page 852 of Gwilt's Encyclopædia. There is an amount of *abandon* in the compositions and details of this period that has won the admiration of a no less fastidious critic than Ruskin, who compares it favourably with our more formal English work; nevertheless, it is with something of the comfortable feeling of coming home after a holiday that we now turn to the study of our own styles.

We have already alluded to the Early English period, which is also called the Lancet style from the form of the separate windows, which were, for a long time, used singly or grouped in couplets or triplets. Soon they came under the protection of an inclosing dripstone, and then circles and other forms began to peep through the remainder of the inclosed space, and, by degrees, the window lights and these piercings became fused into tracery, such as may be seen at Westminster Abbey. Perhaps the finishing touch of the system was given by the French designer of this building, for tracery had been used in France long before we adopted it.

The study of tracery is an interesting one, and may be followed in Sharpe's "Windows." From circular and other "geometrical" forms, it gradually became blended into "curvilinear" lines, after which a taste set in in favour of "perpendicular," or rather "rectilinear" lines (often in connexion with depressed four-centred arches), which were not confined to the tracery of the windows, but were spread all over the surface of the buildings from floor to roof; thus fulfilling the distinction, pointed out at the beginning of this article, between the attention to the bones and the skin of architecture.

On the subject of roofs Fergusson repeats his pet regret that we adopted the double covering,—stone inside and wood over it,—instead of making a thorough job of one or the other; especially as we became so proficient in the construction of open-timber roofs (see Brandon's work on these), culminating in that over Westminster Hall (see Gwilt's "Encyclopædia," p. 181), 68 ft. internal span and 238 ft. long, erected in the reign of Richard II.

Viollet-le-Duc points out the danger of cracks or settlements in a stone-covered vault, and the convenience afforded by an upper wooden roof in obtaining access to all parts of the back of a stone vault below it for repairs, &c. However glorious the English open-timber roofs were, our stone vaults were no less beautiful. Indeed, while the French seemed satisfied with their plain quadripartite vault when they had got it, the English soon began to introduce intermediate ribs, and gradually made our vaults richer and richer, until it become a question of carving these ribs out of the same stone as the filling-in instead of the filling-in being supported by the ribs.

Then, again, the unequal lengths of these ribs (the diagonal being longest, and the wall-ribs shortest, with ever so many intermediate lengths between them), was felt to be an objection that must be overcome; hence the invention of fan tracery, in which all the ribs are of the same length and curvature. Then came the ingenious contrivances for suiting fan tracery to oblong bays, the culmination of which may be seen in Henry VII.'s Chapel at Westminster. An internal view will be found in Rosengarten (p. 335) and Smith (p. 57). Willis's paper on vaulting contains a back view of this structure showing the wonderful manner, in which the stones are keyed together.

Another peculiarity of English Gothic, during the whole Middle Ages, lies in the square eastern ends of our churches which were adopted when we had become quite free from French influence: by this means we obtained grand east windows, such as that at Gloucester Cathedral. Lastly, the general external proportions of our cathedrals and other churches are far more beautiful than those built by the French. They, with their frequent double aisles, raised their naves to an immense height. We were content with a low and long proportion, which gives full value to the height of our towers, and which admits of double transepts in several examples. The play of perspective is thus much improved. An excellent idea of our cathedrals may be obtained from a plate in the "Quarterly Papers" of the Institute, in which block models of several of them are represented in perspective to the same scale.

Domestic architecture went hand in hand with Ecclesiastical, houses being designed in the same style as churches (it is reserved for our day to pronounce that one style is fit for the one, and another style for the other), and yet there is no danger of mistaking these Mediæval houses for churches.

Sculpture became more formal and square in its treatment in the fifteenth century. In connexion with the chancel screens an excellent school of figure-painting on the panels prevailed, especially in Norfolk. Drawings of some of these were purchased by the Institute. Generally the same works may be consulted in fifteenth-century Gothic, as were referred to in the last article: and Burges's "Architectural Drawings" should have been added to the list.

Stratford-on-Avon Water Works.—Mr. E. Willcox, A.-M. Inst.C.E., of Sutton Coldfield, has been appointed Resident Engineer for these works.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

Aug. 15.—11,313, G. T. Harrap and F. C. Hawtin, London, Fans for Ventilating.—11,315, G. H. Jennings, S. Jennings, and J. Morley, London, Controlling, &c., Supply of Water for Sanitary Purposes, &c. (June 28, '84.)

Aug. 16.—11,332, W. Triffitt, Bradford, Window Blinds.—11,335, M. Cohen, Liverpool, Method of Heating.—11,348, J. Harris, London, Venetian Blinds.—11,349, J. Hill, London, Window-sash Appliances, &c.

Aug. 19.—11,417, E. G. Cotton, London, Stench Traps. Com. by R. T. D'Heureuse, New York.—11,444, E. Homan, London, Fireproof Construction.

Aug. 20.—11,452, T. Hughes, Birmingham, Cord-holders for Blinds.—11,455, R. H. Evans, Manchester, Metal Tie-rods.—11,464, J. Burford, London, Cooking and Heating Apparatus.

Aug. 21.—11,494, H. Harrison, Leeds, Regulating Supply of Water to Closets, &c.—11,496, W. Russell, Manchester, Cooking and Kitchen Ranges.—11,509, A. J. Boult, London, Monumental, Architectural, and similar Work. Com. by F. M. Nichols, United States.—11,515, J. Eaton, London, Fastening Sashes, &c.—11,516, J. Eaton, London, Blinds, &c.

Aug. 22.—11,533, J. Parker, London, Sash-fasteners, &c.—11,541, J. H. Keyser, London, Stoves.—11,544, H. J. Haddan, London, Revolving Shutters. Com. by J. Auderle, Vienna.

Aug. 23.—11,573, A. Skinner and C. H. Thompson, London, Furniture Castors.

Aug. 25.—11,598, W. Poore, London, Heating Apparatus, &c.—11,589, A. Seward and H. G. Walton, Liverpool, Flushing Apparatus.

Aug. 26.—11,640, J. Jameson, London, Trap for Pipes.—11,658, J. Robbins, London, Manholes for Sewers, &c.—11,659, H. H. Lake, London, Street and other Pavements or Floorings. Com. by K. Kühn, St. Johann-on-the-Saar.—11,665, J. Atterton, London, Stench Traps.—11,666, J. Edwards and A. Rogers, London, Fireproof Doors, &c.

Aug. 27.—11,680, W. R. Maguire, Dublin, Wash-hand Basins, Baths, &c.—11,700, C. D. Abel, London, Stoves or Fireplaces. Com. by C. de Choubersky, Paris.—11,703, J. N. Peake, London, Securing Tiles to Walls, &c.

Aug. 28.—11,718, R. Stanley, Nuneaton, Chimney-pots or Ventilators.—11,727, H. Trott, London, Ball Valve for High and Low Water Pressure.

SPECIFICATIONS ACCEPTED.†

Aug. 19.—3,878, J. Smeaton, London, Water Waste-preventing Apparatus for Water-closets, &c.—3,972, G. A. Harvey, Lewisham, Chimney-pots and Ventilators.—10,270, W. Harrison, Sheffield, Spindles for Door-handles.

Aug. 22.—1,164, W. A. Gill, London, Securing Door-handles to their Spindles.—7,452, W. Sanderson and T. A. Moffitt, Gateshead, Blind Furniture.—8,217, A. J. Boult, London, Manufacture of Parquet Floor-plates, &c. Com. by C. Wittkowsky, Berlin.—10,454, H. Trott, London, Ball-valve for High and Low Pressure Water.—10,460, E. Newton, Hitchin, Trap for Water-closets, &c.

Aug. 26.—469, E. Verity, J. N. Verity, and B. Banks, Leeds, Leeds, Opening, Closing, &c., Windows, Skylights, Dampers, Ventilators, &c.—5,928, J. E. Doughty and P. Kranich, London, Builder's Stage.—9,061, W. Clutterbuck, London, Ventilating Tunnels, &c.—10,605, G. D. Peters, London, Spring Rollers for Window-blinds.

Aug. 29.—881, T. R. Shelley, Birmingham, Glazing Conservatories, Roofs, &c.—1,022, E. Edwards, London, Louvres for Church Belfries, &c. Com. by A. Cheneval, Maffe, Belgium.—1,439, J. Parry, Birmingham, Fastener for French Windows, &c.—8,778, J. H. Johnson. London, Heating Apparatus. Com. by E. Körting, Hanover.—8,919, T. F May, Liverpool, Flue-mouth for the Flues of Dwelling-houses, &c.—10,742, S. B. Goslin and J. J. Brown, London, Water-closet Apparatus.

ABRIDGMENTS OF SPECIFICATIONS

***Published during the week ending August* 23, 1884.**

5,861, G. Hand-Smith, London, Sinking or Fixing Colours, &c., into or on Marble, Wood, &c. (Dec. 26, '83. Price 8d.)

This is an improvement on Patent No. 3,610 of 1879 and 5,616 of 1880, in placing the article to be treated in a closed vessel, and subjecting it to a heat of about 140 deg. Fahr. Air is also heated in a separate saturator in conjunction with a solution of the colour required, and this highly saturated and intensely heated air is then forced in under a heavy pressure to the vessel in which the article is, and the colour is fixed thereon.

5,897, R. Lofthouse, Manchester, Creating Currents of Air, &c., for Ventilating Purposes. (Dec. 28, '83. 6d.)

Inside a stationary tube is a rotating cylinder, and in the smaller sizes an Archimedian screw-blade or blades are contained within this cylinder, while in the larger size the blades may be outside the rotating cylinder.

5,971, W. Brindle and T. Brindle, Upholland, Dressing, Ornamenting, or Polishing Stone, Concrete, &c. (Dec. 31, '83. 6d.)

The apparatus consists of a rapidly revolving or reciprocating surface of metal, which is brought to bear against the surface of the stone, &c., while sand and water are placed between the two surfaces.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

† Open to public inspection for two months from the dates named.

Miscellanea.

A Memorial of the Landing of St. Augustine in England.—Mr. John Roddis, architectural sculptor, Birmingham, has just completed a monument to commemorate the landing of St. Augustine in this country and his meeting with King Ethelbert. The spot where this meeting took place is believed to be Cotmanfield, now known as Cottington. It appears that Lord Granville, occupying the office of Lord Warden of the Cinque Ports, has become the owner of the land on which these events took place. According to the *Birmingham Post*, in consequence of reading the historical description of the Isle of Thanet, written by Mr. Robert Bubb, of Minster, in Hutchings and Crowsley's guide to the island, Lord Granville was induced to entertain a plan of erecting a memorial on the spot. He communicated this project to Mr. Bubb, and Mr. Bubb sought the advice of Dr. Freeman, of Birmingham, who is a native of the Isle of Thanet, and is intimately acquainted with its historical legends. Dr. Freeman referred to Mr. Roddis for practical suggestions as to the nature and cost of the memorial, and afterwards engaged in a correspondence with Lord Granville on the subject. In the end it was determined, on the original suggestion of Lord Granville, that the memorial should take the form of a reproduction of one of the famous crosses at Sandbach, near Crewe. Having consulted Messrs. Hardman and Powell, Mr. Roddis prepared his design, which was approved by Lord Granville. The west front exhibits the Christian legend. On the encircled cross at the head of the shaft are four emblems of the evangelists, the lion, the eagle, the man, and the bull. On the panelled shaft below are represented the Annunciation, the Virgin and Child, the Crucifixion, and Transfiguration, with demi-figures of saints and angels. On the north side the theme is continued by figures of the twelve apostles. On the south side is a series of fourteen figures of early Christian martyrs. The east front of the circular cross is filled in with runic ornament, which continues nearly halfway down the shaft, when the design breaks into diamond-shaped panels, filled with figures in the following order:—St. Alban, the proto-martyr of England (A.D. 303); St. Augustine, attended by monks; and Ethelbert, king of Kent. The date of unveiling the memorial will be fixed by Lord Granville.

The Hospital for Diseases of the Chest, City-road.—The Hospital for Diseases of the Chest, in the City-road, is at present being greatly enlarged by the erection of a new block of buildings on the north side. The enlarged structure is 74 ft. wide, and is carried to a height of 84 ft., having a ground floor and three lofty floors above. It is faced with stock bricks, each floor having spacious and lofty two-light mullion windows made of Lascelles' patent concrete. The elevation is surmounted by pediment dormers, and at the south end of the structure there is a tower rising to a height of 114 ft., which will form a central feature in the hospital when the present building is connected with that now in course of erection. The ground-floor of the new building will have a large projecting bay window about 18 ft. in height. The two buildings as connected will be approached by a Gothic entrance under the tower. We understand that the sashes of the several windows will be constructed on an entirely new principle, invented and patented by the foreman of the works. The invention consists of the iron framework and glazing of each sash being reversible, so as to open both ways, thus providing increased facilities for cleaning and ventilation. The basement will contain a kitchen, 32 ft. by 18 ft., together with scullery and other culinary offices; also the officers' dining-room; whilst in the rear will be the machinery for a hydraulic lift connected with the several floors. The ground and first and second floors will each contain three wards, 31 ft. by 18 ft., the third and dormer floors being set apart as dormitories for the matron and servants. Mr. J. O. Abbott, of Charing-cross, is the architect, and Mr. W. Brass, of Old-street, is the contractor. Mr. T. Abbott (nephew of the architect) is clerk of the works, and G. Harris the foreman. The estimated cost of the building is about 14,000*l*.

The Electric Light at the Law Courts. The installation of machines and engines has hitherto been only temporary, being in an iron shed on the waste ground to the west of the building. The permanent plant will be placed in the crypt under the great hall. This change involves a considerable amount of labour, as the existing steam boilers, which were only designed for the ventilation of the buildidng, will have to be removed, as also will nearly all the existing steam and exhaust pipes as well as several large tanks. When completed there will be two 100-horse power Galloway patent boilers, two single-cylinder horizontal engines, each indicating 105-horse power at sixty revolutions, either one being capable of doing the whole of the lighting. The requisite speed for the dynamos, about 1,100 revolutions, will be obtained by two sets of shafting, with friction clutches on the first, so as to allow either or both the engines to be worked, as necessary. Six Crompton-Burgin compound wound 10-unit machines, all coupled parallel, will produce the current for the general illumination, lighting about 650 twenty-candle-power Swan lamps. A small Willans high-speed engine, with electric governors, will drive a 6-unit machine for lighting an all-day circuit of about forty-five lamps. There will also be two Burgin series machines, each lighting a series of three 4,000 candle-power Crompton-Crabb arc lamps, in the central hall. The engines, boilers, &c., are being fitted by Messrs. Galloway & Sons, and the dynamos, cables, switch-boards, &c., by Messrs. R. E. Crompton & Co., who fitted and wired the building, and under whose supervision the lighting was carried on until May last, when it was taken over by the Government, under the control of Her Majesty's Office of Works.—*The Electrician.*

The Dundee Institute of Architecture, Science, and Art.—The programme for session 1884-5, includes the following syllabus of papers to be delivered during the session, viz.,—Nov. 20th, Professor G. Baldwin Brown, on "Architectural Art"; Dec. 18th, Mr. Henry Pattullo, on "The Law of Building Contracts"; Jan. 15th, 1885, the Rev. George Mure Smith, on "Church Bells"; Feb. 18th, Professor Carnelly, D.Sc., on "Some Chemical Facts Connected with Plumber Work"; March 19th, Mr. Geo. S. Aitken, F.S.A. Scot., on "Ecclesiastical Architecture"; April 16th, Professor Ewing, B.Sc., F.R.S.E., on "The Sanitary Inspection of Dwelling-Houses"; May 21st, Mr. J. G. H. Spindler on "Art Work in the Middle Ages." The *conversazione* will take place early in October, and the business meeting for election of office-bearers, &c., on June 21st. Prizes for designs, &c., are offered, and particulars of the conditions may be had from the hon. secretary, Mr. Charles Ower, architect, 104, Commercial-street, Dundee.

The Royal Princess Theatre, Edinburgh, has been reopened, after a thorough overhaul as regards decoration. The mouldings which used to divide the centre of the ceiling have been taken away, leaving an unbroken circular space, on which is painted a design on a light blue ground, formed by Cupids supporting festoons with musical emblems. The enriched moulding round this panel is bronze and gold, and the remainder of the ceiling is powdered with pateræ of a brownish tint on a yellow ground, giving relief to the centre. The proscenium-opening and fronts of balconies are also bronze and gold, and on the space over the proscenium are painted two winged figures in the spandrels of the arch. The walls of the whole auditorium are covered with a soft blue damask paper, which gives a cool effect to the interior. The work has been done by Messrs. Geo. Dobie & Son, 23, George-street, and Messrs. W. R. Clapperton & Co., Princes-street, respectively.

The Drainage of Cape Town.—The *Cape Argus*, just received, contains the report of the three engineers appointed to adjudicate upon the competitive schemes for the efficient drainage of Cape Town. By their unanimous award, the premium of 250*l*. is accorded to the scheme under the motto "Sanitary," sent in by Mr. Isaac Harpur, son of Mr. Samuel Harpur, the engineer and surveyor to the Merthyr Tydfil Local Board. It would appear from the report of the adjudicators that one of the chief merits of Mr. Harpur's scheme lies in his selection of the outfall. Mr. Harpur is now engaged in superintending, under the resident engineer, the reconstruction of the Molteno reservoir at Capetown.

An Electric Lighthouse in Brazil.—An electric lighthouse has recently been erected on the island of Raza, at the entrance of the Bay of Rio Janeiro. The lighthouse proper is 85 ft. high, and is put upon a rock 230 ft. in height, so that the focus of the light of the apparatus is fixed at an elevation of 315 ft. above the sea. The electric current is produced by a continuous current Gramme machine, working at the rate of 700 revolutions, and feeding a light of 2,000 candle-power. The Gramme machine referred to is worked by a stationary surface-condensing steam-engine, this arrangement being inevitable owing to the want of fresh water. All the fittings are double, so as to prevent interruptions by unforeseen accidents; and, to make assurance doubly sure, an oil-lamp is always kept in readiness. The light is revolving, having two white discs and one red one, succeeding one another at fifteen minutes' interval, and the light is visible at a distance of about thirty-five statute miles.—*Iron.*

The Sunday Society.—On Sunday last Grosvenor House was open for the last time this season to the members of the Sunday Society. In July last the Duke of Westminster, as president, authorised the honorary secretary, Mr. Mark H. Judge, to issue tickets of admission to the members of the Sunday Society and to the Sunday League. Each ticket admitted the bearer on any day in August, between the hours of two p.m. and six p.m., so that it is interesting to note how these tickets were used. The following figures give the highest number of visitors on the different days of the week:—Mondays, 28; Tuesdays, 35; Wednesdays, 33; Thursdays, 39; Fridays, 84; Saturdays, 99; Sundays, 494. It is claimed that this result corresponds with the results of Sunday opening wherever it has been tried, whether in this country, the United States, or on the Continent.

Ulverston.—The great west window of Holy Trinity Church, Ulverston, has just been filled with stained glass, by way of memorial of the late Mr. Miles Kennedy, of Stone Cross. The window is of three lights, the centre light being 23 ft. by 5 ft. and the side lights of somewhat less dimensions. The subjects selected for illustration are excerpt from the *Te Deum*. The work is in the style of the thirteenth century. Messrs. Powell Bros., of Leeds, are the designers and painters, and the work has been carried out under the superintendence of Mr. J. W. Grundy, architect, Ulverstone.

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Municipal Hall and Offices, Bombay	Municipal Commissnrs.	Rs. 5,000, 3,000, 2,000.	Nov. 6th	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
New Station at Bradford.....	Lan. & Yorks. Ry. Co.	*Official*	Sept. 9th	
Stables at Bromley-by-Bow	Lon. Gen. Omnibus Co.	do.	Sept. 11th	xx.
Asphalte Carriageway Pavements	Commissionrs of Sewers	do.	Sept. 12th	ii.
New Street Work	Vest. St. Giles, Cambwl	do.	Sept. 15th	xxi.
Erection of Houses, Edmonton		Whitmore & Reeves ...	do.	ii.
Brick and Pipe-Sewers, &c.	Willesden Local Board	*Official*	Sept. 16th	xxi.
Sanitary Works	Poplar and Stepney Asylum District.....	A. & C. Harston	do.	ii.
Sewering, &c., Chiswick New Town.....	Chiswick Local Board...	*Official*	Sept. 17th	ii.
Do. Bedford Park Estate	do.	do.	do.	ii.
General Paving Works.....	Westminster B. of Wks.	.....	do.	ii.
Gasfitter's Work	Com. of H.M. Works...	*Official*	do.	ii.
Bellhanger's Work	do.	do.	do.	ii.
Caterham Asylum Alterations	Met. Asylums Board ...	do.	Sept. 18th	xxi.
Girders, &c. for Bridge	Midland Railway Co. ...	do.	do.	ii.
Aberdeen Pitchers	Gravesend U. S. A. ...	do.	Sept. 19th	xx.
Post-office at Stroud.....	Com. of H.M. Works	*Official*	Sept. 20th	ii.
Police-court and Offices at Stratford	West Ham Local Brd.	do.	Sept. 23rd	xxi.
Bridge, Marshgate-lane	do.	do.	do.	ii.
House for Medical Officer	South Met. School Bd.	Not stated	do.	xxi.
Main Drainage Works.....	West Bromwich Cor....	*Official*	do.	ii.
Brick Sewer at Grove Park, Lee	Met. Board of Works	do.	Sept. 25th	ii.
Enlargement of Station, Perth	Perth Gen. Statn. Com.	Blyth & Cunningham...	Sept. 26th	xxi.
New Waiting-Rooms, Newhaven Harbour.....	L. B. and S. C. Ry. Co.	*Official*	Sept. 29th	ii.
New Offices, Berwick-street, Newcastle.....	Tyne Improvment Com.	R. J. Johnson	Sept. 30th	xxi.
Portland Cement	Improvemnt Commisnrs Port of Calcutta	.....	October 8th	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Applications to be in.	Salary.	Page.
Engineer and Surveyor	Aston Union R. S. A....	Sept. 11th	200*l.* per annum.....	xviii.
Inspector of Nuisances and Surveyor	Mkt. Har. Un. R. S. A.	Sept. 18th	130*l.* do.	xviii.
Surveyor	Northampton Cor.	Sept. 22nd	200*l.* do.	xvlii.

TENDERS.

For constructing a jetty, with landing-stairs and slip-way, and dredging the foreshore, and other works in connexion, at Flathouse, Portsea, for the Corporation of the Borough of Portsmouth. Mr. H. Percy Boulnois, Borough Engineer. Quantities supplied by Mr. H. P. Foster, John-street, Adelphi, London:—

Lucas & Son, Kensington.....	£45,067 0 0
J. Mackay, Hereford	40,180 15 9
T. B. Hayter, Stamshaw	34,470 0 0
W. R. & C. Light, Landport	32,000 0 0
J. Mowlem & Co., Westminster ...	30,809 0 0
T. P. Hall, Buckland	29,926 9 0
F. Bevis, Kingston-crescent	26,731 4 6

For the enlargement of gas-works in connexion with the Asylums for Imbeciles, at Darenth, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects, 15, Leadenhall-street, E.C. Quantities not supplied:—

Cutler & Son, Millwall	£6,685 0 0
G. Bower, St. Neot's	5,541 0 0
J. T. B. Porter, & Co., Lincoln.....	5,507 10 0
Holmes & Co., Huddersfield.....	5,200 0 0
Willey & Co., Exeter (accepted).....	5,014 0 0

For taking down the Berkshire Brewery, King's-road, Reading, and erecting eight houses and six cottages on the site, using in the old materials, for Mr. Wm. Bailey. Mr. Joseph Greenaway, architect and surveyor, 19, Duke-street, Reading. Quantities supplied:—

		A*
Blake	£5,500 0 0	£80 0 0
Simonds	5,423 0 0	76 0 0
Sheppard.....	5,234 0 0	70 0 0
Searle	4,817 0 0	—
Kingerlee	4,695 0 0	100 0 0
Woodroffe	4,700 0 0	52 10 0
Margetts.....	4,650 0 0	74 1 6
Bourton	4,639 10 0	79 0 0
Higgs	4,6 0 0 0	83 0 0
Denton.....	4,344 0 0	67 0 0
Bottrill	4,350 0 0	50 0 0
Pilgrim	4,250 0 0	50 0 0
G. Winter	3,865 0 0	70 0 0
Wernham	3,860 0 0	67 10 0
Poffley.....	3,840 0 0	68 0 0
Goodchild	3,768 0 0	79 0 0
Newberry	3,600 0 0	65 0 0
Hawkins	3,500 0 0	70 0 0
Taylor	3,400 0 0	50 0 0

* Amount offered for sundry cast-iron work, &c.

For proposed system of sewerage, at Dorking, for the Dorking District Local Board. Messrs. Smith & Austin, engineers:—

McCrea & McFarland, Westminster	£21,329 0 0!
Jas. Young & Co., Hereford	17,848 0 0
J. W. & J. Neave, Stratford	16,962 0 0
J. Mowlem & Co., Westminster.....	16,390 0 0
Falkner, Redhill.....	15,850 0 0
Bottoms Bros., Battersea	15,275 0 0
Putney, Dorking	14,395 0 0
Battens & Blackmore, Clapham ...	14,203 0 0
Cook & Co., Battersea.....	14,109 0 0
Woodham & Fry, Greenwich.....	13,630 0 0
Iles, Wimbledon.....	13,678 0 0
Beadle Bros., Erith	13,427 0 0
J. Roberts, Stratford-on-Avon	13,244 0 0
Dickson, St. Alban's.....	12,797 0 0
T. P. Hull, Portsmouth	11,912 0 0
Cardus & Bowse, Acton	11,245 0 0
Etheridge, Croydon	10,203 0 0
Crook & Smith, Southampton.....	9,228 0 0!

For nine houses at Stratford-green, for Mr. Bigg. Mr. Stimpson, architect:—

Curnow	£2,924 0 0
Castle & Son	2,695 0 0
Boulton & Lee	2,473 0 0
Baxter.....	2,412 0 0
Bricknal	2,250 0 0
Ellis.....	2,175 0 0
Rogers.....	2,115 0 0
Smith	2,115 0 0
Watson	2,070 0 0
England	2,070 0 0
Thompson & Tweed.....	2,043 0 0

For alterations, &c., Westminster Bridge-road, for Mr. D. S. Woolf. Mr. Lewis Solomon, architect, Gray's Inn-square:—

Roberts	£1,195 0 0
Jeffreys	1,168 0 0
Beale	1,160 0 0
Palmer.....	1,130 0 0
Salter	1,112 0 0
Jennings.....	1,031 0 0

For alterations and additions to the White Horse public-house, Fore-street, Edmonton, for Mr. Jas. Foan. Mr. A. J. England, architect:—

Lascelles.....	£1,533 0 0
Harris & Wardrop	1,288 0 0
J. Beale (accepted).....	1,274 0 0

For the construction of drains, shafts, and sewage-tank, &c., for the Board of Management of the Royal National Consumption Hospital, Ventnor, Isle Wight. Mr. Wm. Greenhill, St. James's-road [illegible]rbiton, engineer. Quantities supplied by Mr. H. [illegible]. Foster, John-street, Adelphi, London:—

Ingram & Sons (accepted).....	£1,354 0 0

For the erection of new premises in the Kentish-town-road, for Mr. Charles Wilson. Mr. H. H. Bridgman, architect. Quantities by Mr. F. Thomson:—

	If Portland Stone.	If Beer Stone.
A. Drew, Camden-town	£6,200	£6,150
E. Lawrence & Sons, City-road.....	5,619	5,593
Richardson Brcs., London Wall	5,598	5,538
M. Manley, Regent's Park ...	5,547	5,521
B. E. Nightingale, Lambeth..	5,454	5,424
Dove Bros., Islington	5,390	5,325
J. R. Hunt, Bow-common ...	5,356	5,336
S. R. Lamble, Kentish-town.	5,294	5,254
Wall Bros., Kentish-town ...	5,290	5,235
W. Scrivener & Co., Regent's Park	5,263	5,203
W. Shurmur, Lower Clapton	5,247	5,210
Gould & Brand, Camden-town	5,200	5,150
E. Toms, Camden-town*	5,119	5,059

* Accepted, with an addition of £575 for party-wall, fittings, &c., making a total of £5,634.

For re-instating No. 41 and 42, High-street, Uxbridge, after fire, for Mr. H. J. Grainge. Mr. George Eves, architect:—

Hardy.....	£785 0 0
Taylor.....	756 0 0
Hall.....	748 0 0
Kearley	648 0 0

For shops and mineral water factory, for Mr. James Cox. Messrs. Whitmore & Reeves, architects and surveyors, 14, Devonshire-square, Bishopsgate:—

		Old Materials.
E. Conder, Kingsland-road.....	£5,359	—
Langmead & Way, Gray's Inn-road	5,100	£10
Jarvis & Sons, Hackney-road...	5,045	46
F. & F. J. Wood, Mile End-road	5,047	60
F. G. Higgs	4,936	20
G. W. Beale, Cambridge-heath Bridge	4,898	15
B. E. Nightingale, Lambeth ...	4,890	30
J. Walker, Limehouse	4,533	—
C. Forrest, Victoria Park.....	4,685	100
Steel Bros., Dalston	4,277	30
C. Wyman, Edmonton	4,233	50
Wyman (reduced)	4,105	—
Steel Bros. (reduced)*.....	4,050	—

[Architect's estimate, £4,300.]

* Accepted.

For making new road, to be called Pincey-road, E., leading out of Marsh-hill, Homerton, and sewer, for Mr. James Chambers. Mr. Francis W. Searle, surveyor, Tottenham:—

Taylor.....	£490 0 0
Pound	479 0 0
Potter.....	418 0 0
Porter.....	389 0 0

For additions and renovations to St. Barnabas's Church, South Kensington. Mr. Charles Moore, architect:—

		Renovations only.
Andrew & Nanson.....	£1,292	£406
Higgs & Hill	1,037	339
Allen	—	323

For new schools and master's house, at Crumlin, Newport, Mon. Mr. E. A. Lansdowne, architect. Quantities supplied:—

John Linton, Newport	£2,499	0	0
Wm. Jones & Son, Newport	2,287	0	0
Thos. Williams, Newbridge	2,280	0	0
Henry Parfitt, Pontnewydd*	2,075	0	0
John Burgoyne, Blaenavon	2,040	0	0

* Accepted.

For new stables and coachhouse, at York-place, Newport, Mon., for Mr. H. A. Huzzey. Mr. E. A. Lansdowne, architect. Quantities supplied:—

Force, Bristol	£350	0	0
Wm. Jones & Son, Newport	290	0	0
W. Blackburne, Newport	280	0	0
Moulton & Bromscombe, Newport	275	0	0

For the erection of warehouses in Banner-street, St. Luke's, for Mr. R. Scully. Mr. J. Groom, architect:—

S. Sabey & Son (accepted)	£3,552	0	0

For rebuilding No. 125, High-street, Southampton, for Mr. John H. Cooksey. Mr. W. H. Mitchell, architect, Southampton:—

Jonas Nichols	£3,235	0	0
Stevens & Sons	3,124	0	0
H. J. Sanders	3,117	0	0
Bull, Sons, & Co., Limited*	2,929	0	0

* Accepted.

For the erection of new house at Little Chart, Kent, for Mr. J. D. Blount. Mr. W. Ravenscroft, architect, Reading:—

Hughes, Ashford	£935	0	0
Baker, Ashford	925	0	0
Barden, Maidstone	879	0	0
Vaughan, Maidstone	719	0	0
Steddy, Joy, & Steddy, Ashford*	710	0	0

* Accepted, subject to a few modifications.

For the erection of two houses with shops, Vicarage-lane, Stratford, Essex, for Mr. Geary. Mr. Alfred Birt, architect:—

D. D. & A. Brown	£750	0	0
G. J. Hosking	589	0	0
North Bros.	5?7	0	0
A. Saunders (accepted)	55?	0	0

For the erection of shops and dwelling-houses, at King-street, Ramsgate, for Mr. W. Marcoolyn. Mr. E. L. Elgar, architect. Quantities supplied:—

Duckett	£2,333	0	0
Newby Bros.	2,141	10	0
Martin	2,?65	0	0
Miller	2,?30	0	0
Smith	1,964	0	0
J. & H. White	1,940	0	0
Bowman	1,920	0	0
J. Newby	1,920	0	0
Port	1,850	0	0
Home	1,?99	0	0

For the erection of two cottages, at Haine, Ramsgate. Messrs. Hinds & Son, architects:—

Paramor	£400	0	0
Newby	351	10	0
Smith	350	0	0
Bowman	348	0	0
Miller	338	0	0
Duckett	320	0	0

For the construction of the Erdington Extension Tramways, Birmingham, comprising about two miles of double and single line, for the Birmingham and Aston Tramway Co., Limited:—

Jacob Biggs, Birmingham (accepted at schedule of prices).

For re-instating the Chequers Hotel, Uxbridge, after fire, for Messrs. Harman & Co. Mr. George Eves, architect, Uxbridge:—

Hardy	£1,133	0	0
Taylor	1,105	0	0
Kearley	993	0	0
Fassnidge & Son	980	0	0
Hall (accepted)	819	18	0

For erection of a confectionery factory, at Uxbridge (ovens not included), for Mr. Blackwell. Mr. George Eves, architect:—

James	£619	0	0

For additions and alterations to No. 1, Newland-terrace, Kensington, for Mr. Buckle. Mr. George Eves, architect:—

Parks & Roberts	£499	10	0

Accepted for four houses in Denby Dale-road, Thornes, near Wakefield, for Major Barker, J.P. Mr. G. H. France, architect, Wakefield. Quantities by the architect:—

Brickwork, Slating, and Plastering.

Flower Bros., Wakefield	£547	16	4

Carpenter and Joiner.

N. Ibbottson, Belle Vue, Wakefield	214	11	9

Plumber and Glazier.

F. Stafford, Wakefield	53	19	6

Painter.

J. Rayner, Wakefield	17	4	0

For the erection of a washhouse, &c., New-row, Thornes, near Wakefield, for Major Barker, J.P. Mr. G. H. France, architect:—

Flower Bros. (accepted)	£234	17	0

For the whole of the work required for erection and completion of "Salvation Army barracks," in Darlington, for "General" Booth. Mr. E. J. Sherwood, architect, Queen Victoria-street, E.C.:—

Wm. Thompson, Chester-le Street	£3,500	0	0
Wm. Holt, Cheetham, Manchester	3,070	0	0
W. E. Gent, Darlington	3,042	10	0
John Hewett, Darlington	2,946	0	0
J. W. & M. McKenzie, Darlington	2,910	0	0
J. Hope, Darlington	2,800	0	0
R. T. Smith, Darlington	2,767	0	0
G. Marshall, Darlington	2,720	0	0
F. J. Coxhead, Leytonstone	2,681	0	0

For new windows to Female Wards, and new roof to Cook-room, at the Uxbridge Union, for the Guardians. Mr. B. Freeman, architect:—

Garrett, Uxbridge	£222	0	0
Bell, Southall	173	0	0
Kearley, Uxbridge	157	12	0
Taylor, Uxbridge	157	0	0
Hardy, Cowley	143	0	0
Quinion, Southall	136	12	0
Pearse, Southall	129	0	0

For building mansion, Branston Hall, near Lincoln, for Mr. A. S. L. Melville:—

E. Lawrance & Sons (accepted)	£18,600	0	0

Special Notice.—Lists of tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, Strand, W.C., not later than four p.m. on Thursdays.

TO CORRESPONDENTS.

J. A. S. (both communications received).—L. McL.—F. B. (it is perfectly possible to construct such storage-tanks so as to be absolutely impervious).—J. P. Madrid.—B. and P. Sydney (photograph received; shall appear).—D. and I.—L. and Son.—W. J. E. (write to Batsford, Bookseller, High Holborn).—M. H. J. (we require amount of Tender to be stated).—J. L.—"Cædo Nulli" (we are obliged to decline recommending books; see "standing order" to that effect below).—C. H. H. (next week).

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We are compelled to decline pointing out books and giving addresses.

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